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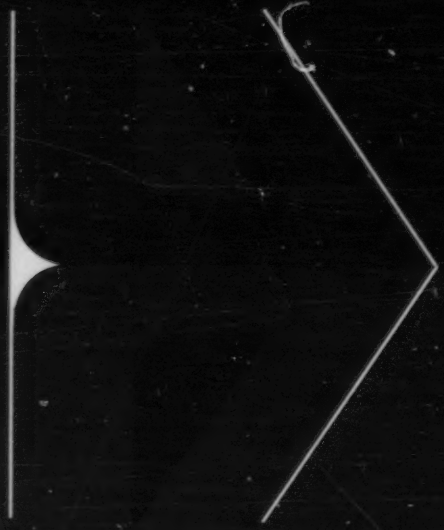

THE ANALYSIS OF CONFLICTS OVER THE LOCATION OF AIRPORTS NEAR MAJOR POPULATION CENTRES

RESEARCH REPORT NO. 87

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ABSTRACT

The siting of airports near major population centres has frequently led to long and costly conflict. In view of the numerous parties who have power to influence airport location decisions, a multi-participant, strategic and tactical decision-making model is applied to these complex situations. A number of case studies of actual conflicts are presented. Their common and divergent features are analyzed in terms of the strategic and tactical model. This leads to some prescriptive conclusions especially applicable to the Canadian context.

CHAPTER ONE
INTRODUCTION

In 1966 the Japanese government announced its intention to build a new international airport for Tokyo. It was scheduled to open in April of 1971. Although construction was in fact completed in 1972, opposition by residents and local governments delayed inauguration of the facility until March of 1978. It was estimated that interest charges due to the delay were in excess of $1 billion.

The violent conflict over the location and construction of Tokyo's new airport is probably the most outstanding example of a large number of controversies which ensued in the 1960s and 1970s over the construction of large airports near major population centres. It was the objective of the research project whose findings are presented here to study the resolution process of such conflicts.

The location of airports has often been treated theoretically as a complex and largely technical problem the resolution of which was essentially seen to be in the hands of a single decision maker (e.g., a government). Thus, sophisticated analytical methods, such as cost-benefit or multi-criteria decision analysis, were applied to these situations, often at very considerable expense. However, again and again the findings of such studies were rejected by airport supporters and opponents alike.

This strongly suggests that the analytical methods used were inappropriate. It will be argued below that the main reason for this was the fact that they did not take the political nature of airport location decisions into account. Such decisions affect the interests of a considerable number of

actors (e.g., governments, industries, labour unions, local residents) who sooner or later may become participants rather than observers of the decision-making process. Therefore, the work presented here applies a model to the decision-making process, which recognizes and explains outcomes as results of strategic and tactical choices by such participants.

We shall begin our presentation with a survey of analytical methods and approaches which have in the past been applied to airport location problems. Since cost-benefit analysis has been the method most frequently chosen, we shall highlight various aspects of this technique with regard to its theoretical and practical shortcomings. This critique will then lead to a presentation of the model chosen for this study which aims to avoid such faults.

This study was intended to have a strong empirical base insofar as we wanted to examine a number of cases of airport location conflicts. A preliminary survey revealed, however, that sufficient material was readily available from published sources only in two cases: that of the conflict surrounding London's proposed third airport and of the dispute over Toronto's second major airport. Accordingly, the authors undertook studies of four additional cases. These are presented in appendices and summarized in the main body of this report.

Based on the model introduced previously and the findings of these case studies, we then develop aspects of a general multi-participant model for airport location conflicts. Initially, we shall focus on strategic features of such conflicts, that is, on characteristics relating to their eventual resolution. In particular, we shall examine possible participants in these conflict situations and consider their

interests and power in relation to conceivable final results. This will then lead to a consideration of some of the tactical characteristics of the resolution process, that is, of the means which the participants may employ to achieve desired ends.

It will be shown that some of the means may be effective from the point of view of certain participants, but may introduce inefficiencies into the resolution process. Such inefficiencies are harmful for all of the participants concerned and should obviously be avoided. This thought leads to a number of prescriptive considerations based on our model which are presented in the final section of this report. In brief, it is argued that a successful and efficient resolution of airport location conflicts depends on productive bargaining between the participants, which implies advocacy of interests which the participants represent, as well as flexibility with regard to the ways in which these interests may be satisfied.

CHAPTER TWO
ANALYTICAL APPROACHES TO THE LOCATION OF AIRPORTS

The large-scale introduction of jet aircraft for civil aviation in the late 1950s led to the recognition that the expansion of existing airports or the construction of new airports had become an extremely complex technical, financial, economic, social and political problem. The situation became even more complicated when environmental considerations gained prominence in the 1960s and early 1970s. Airports then emerged as contentious issues not only for politicians, the industry and local populations, but for entire nations. For years, Tokyo's new airport was one of the major political issues in Japan; plans to build a new airport for Miami led to a national coalition of over 3 million conservation-minded Americans; and London's proposed third airport led to the most expensive and probably most prominent planning exercise in the history of Great Britain.

Interestingly, this recognition of the contentiousness of the airport location problem coincided with the development of new theoretical approaches to such issues. Cost-benefit and cost-effectiveness analysis especially became widely known during the first years of the Kennedy Administration in the U.S.A. and were subsequently applied to the problem of deciding on the need for, and the evaluation of, new airports. In the following we examine those and other analytical approaches in the light of theoretical considerations and of practical experience.

At a relatively early stage, it was recognized that the decision to construct a new airport or expand an existing airport involved a very large number of alternatives (e.g., possible sites) and also a very large number of values, objectives or constraints (the recognition that it also involved a number of participants came only much later). Accordingly, the problem necessitated the

use of multiple objective decision techniques. Roughly speaking, such techniques can be divided into two categories: elimination procedures and weighting procedures.[1] In elimination procedures, alternatives are rejected if they do not meet a chosen minimum requirement with respect to one or more objectives. Weighting procedures attempt to evaluate the performance of each alternative with regard to each objective, then aggregate each of the performance scores for an alternative in the form of a "weighted average", and finally compare the averages of the alternatives so as to choose the "best one", that is, the one with the highest (or lowest) weighted score. More specialized techniques vary according to the particular form of elimination or weighting and to the extent to which they are formalized. Generally - especially in the large location studies - elimination and weighting methods are used successively.

In cases where possible alternatives are not immediately given, the first step is generally to develop an algorithm for generating such alternatives. These include possible sites for new airports, but may also include the possibility of not undertaking any new construction or of expanding existing facilities. Usually, possible sites are generated using a geographical grid system.[2] Obviously, this may produce a very large number of alternatives, certainly far too large to subject to any detailed evaluation procedure. Accordingly, the first step of the evaluation is to apply a simple elimination procedure. For example, alternatives may be rejected because they do not meet certain very stringent constraints: an expansion may not be possible because the area surrounding the airport is already densely populated (as was the case in London Heathrow); sites for a new airport may not be feasible because they are geographically or meteorologically unsuitable, or

because they interfere with existing air traffic. Application of such elimination procedures may eliminate as many as 99 percent of the initially delineated alternatives[3], but may still leave a relatively long list of feasible options (e.g., the Roskill Commission considered 78 sites initially; in Toronto the initial site selection procedure led to 118 possible sites). In such a case, further, more stringent elimination criteria may be applied so as to eventually arrive at a list of alternatives short enough to allow an in-depth comparison.

While such comparisons are nearly always carried out in terms of more or less explicit criteria, they differ significantly in the way in which alternatives are evaluated against such criteria and the ways in which such evaluations are combined.

Perhaps the least formal method is that of simply describing, in qualitative or quantitative terms, the performance of various alternatives against various criteria. Such an approach was chosen, for example, by the Environmental Studies Board when it examined (and rejected) the possibility of expanding New York's Kennedy Airport into Jamaica Bay[4]; it was also adopted in selecting a site for a second airport for Boston[5], although this study did not indicate a unique site as "best", but only delineated a number of possible sites. The selection of a site for the proposed second airport for Toronto was justified in a similar way.[6]

The problem with such an informal approach is, obviously, that it will generally not give a unique ranking of alternatives; some alternatives will perform better in one respect, others will be preferred in light of different criteria. The obvious "solution" to this problem is to make criteria comparable, so

that they can be aggregated. One step towards this method is taken in what is called "cost-effectiveness" analysis. The underlying idea is that "costs" can commonly be expressed in a quantitative, monetary unit and can thus be aggregated into a single figure for each alternative. "Effectiveness" however, is generally much more difficult to measure on a common, quantitative scale, and the method, therefore, proposed to retain a variety of quantitative or qualitative measures which are not aggregated.[7] This method allegedly simplifies the comparison of alternatives, since at least the cost component is measured on a single scale. However, there is still a distinct (and likely) possibility that preferences for alternatives may not be uniquely determined because of the incomparability of measures of "effectiveness".

Logically, the next step is to attempt to find a common, comparable scale for all objectives and thus to arrive at a single measure of performance for each alternative. There are obviously several ways of arriving at such a measure. Perhaps the least sophisticated method is to use scores (from an arbitrary range such as -10 to +10) of alternatives against objectives, and to combine these scores by weighting them for the relative importance of the objectives.[8] This approach obviously has a number of extremely arbitrary elements (such as the "weights" and the assumption that scores are comparable after weighting) and thus seems theoretically unattractive.

A theoretically more acceptable, but extremely difficult procedure is that of "multi-criteria utility" analysis which was applied to the new airport in Mexico City.[9] Since this approach is theoretically complex and has practically very limited use, we shall not consider it in more detail.

By far the most common and generally accepted approach, however, is economic cost-benefit analysis. Again, the intention is to produce a single, performance indicator for all alternatives. In the case of cost-benefit analysis, this indicator is a monetary value representing the difference between costs and benefits for each alternative. Perhaps the most elaborate and theoretically most ambitious argument for this approach has been made in the Central England Airport Study which provides the following methodological summary:

> "A change such as the construction of an airport can be measured in terms of the changes of consumption of goods and services which this produces. This is evaluated using a single price system provided these goods and services are widely enough defined to cover all factors which determine satisfaction of individuals in the community."[10]

In practice, such detailed evaluations are obviously not possible; instead, a number of simplifying assumptions are made regarding economic effects of various alternatives, so that only a small number of such effects need be considered. The Central England Airport Study, for example, identifies four categories of effects:

> " - the change in profits before tax of all the organizations concerned; this profit is calculated using the same prices for each alternative in a given time period.
> - a correction for consumption imposed on individuals by the change.
> - corrections in cases where resources are not fully used (e.g., unemployment).
> - an evaluation of those factors which are not usually included in the economic process (e.g., passenger time and noise nuisance)."[11]

Since economic benefits and costs are distributed over time, they have to be aggregated into a single figure by using discounted cash flows rather than profits or costs as such.

In the early 1960s, when this approach was first applied to large project evaluations (a major application was to the London Underground transportation system[12]), it was immediately hailed as a new tool of social planning, not only by experts, but also by the interested population. Its major advantage was that it claimed to consider not only narrow financial costs and benefits, but wider social consequences (e.g., it made the construction of a new underground transportation line appear economically advantageous). However, when cost-benefit analysis came to be applied to highly controversial issues, such as the location of airports, its limitations soon became more prominent than its initially perceived advantages. Here, we shall not give a detailed critique of the method (which has been supplied by others[13]), but only emphasize a number of assumptions underlying its application which seem especially significant for our purposes.

The first assumption of cost-benefit analysis is that the consequences of various alternatives can be evaluated (if only at the margin) in terms of a common, monetary unit. Second, it is assumed that such evaluation can be measured; in other words, the actual performance of various alternatives against objectives cannot only be thought of in monetary terms, but can practically be measured in those terms. Accepting the first assumption, for the moment, let us examine the second by way of an example.

A great deal of research has gone into investigating the impact of airports on the regional and national economy. Obviously, this will be a major item in any general cost-benefit analysis of an airport proposal. Since we are speaking of the airport's impact on the economy, it seems reasonable to assume that this can be measured in monetary terms, i.e., the first assumption of cost-benefit analysis will probably be appropriate. But what about the measurement of these economic effects? A number of studies have attempted such measurements directly by surveys and questionnaires[14,15]; that is, local businesses were polled regarding likely effects on payroll and revenues due to a proposed airport. Others have attempted to use forecasting techniques[16] or to measure economic effects directly[17]. Further refinements are possible when one uses an input-output model[18] to obtain estimates of the "multiplier effects" of resources invested in an airport. All these techniques suffer not only from serious methodological flaws (such as the unreliability of questionnaire results in situations when the population questioned favours certain findings), but also from another major problem. That is, it is not sufficient to simply investigate the economic effects of spending scarce resources on one airport alternative rather than another, but in principle, it is also necessary to compare these effects to those which would arise if the resources were used in any other conceivable way. In theory, one needs to find not only the actual economic costs (and benefits), but the opportunity costs (and benefits). This is virtually impossible since such research would be extremely expensive and time consuming (if it were at all possible).

Accordingly, De Neufville[19] has argued that most economic impact analyses overestimate the beneficial effects of airport constructions or expansions. Conversely, Howard[20] has contended

that economic impact analyses underestimate these beneficial effects, since they do not adequately reflect industry's reliance on aviation. He supports this argument by pointing to the very severe effects of temporary closings of airports (e.g., in Newark in 1952) or of night curfews on airports. However, this clearly neglects the fact that industry may adjust to such changes over time and that resources not spent on airports could be used in other ways.

Perhaps the only conclusion which can be drawn from this is that even factors which are easily quantifiable may be virtually impossible to measure with a reasonable degree of certainty. Since such factors generally involve very large amounts of money, they can easily be crucial to an evaluation of alternatives, and a "rough" estimate is almost certainly insufficient.

Unfortunately, this conclusion applies a fortiori to factors which are not easily quantifiable. Perhaps the most famous example of such a factor was the existence of a unique Norman church at one of the sites for the third London airport considered by the Roskill Commission[21]. Initially, the commission used the fire insurance value of the church, but after severe public protests it decided to take the church completely out of the cost-benefit analysis and to present it as a separate factor. Obviously, this undermined the credibility of the method. However, the commission retained a number of factors in its formal analysis which were probably equally difficult to quantify. For example, it put monetary values on journey time (to and from the airport), even though there is obviously no "market" to give a price for this factor. It would perhaps not have mattered had this been only one of many factors influencing the eventual decision. However, in the case of the

Roskill Commission it turned out that this factor alone was of overwhelming importance and led to the acceptance of Cublington as a site for the airport, rather than Foulness (Maplin)[22]. Again, this aspect discredited the entire methodology which was rejected by the British government when it eventually chose Foulness (Maplin).

While difficulties of quantification and measurement may discredit the method of cost-benefit analysis, the technique is even more restricted in another respect. Normally, it does not address itself to the question of the relative distribution of costs and benefits. Obviously, this will not be the same for all alternatives, and might thus have to be taken into account. The Central England Aviation Study (which superseded the Roskill Commission by four years and could thus draw on its experiences) clearly recognized this[23] and argued that the analysis should be carried out from a particular viewpoint; it decided to carry out an evaluation from the point of view of,

> "the UK community plus those foreign passengers using UK airports and foreign airlines."[24]

Underlying this choice was the assumption that either such a viewpoint would be acceptable to all those who had some power to influence a decision on the airport, or that there was only a single decision maker who should (or would) adopt that viewpoint. Since the former is extremely unlikely, the latter must have been accepted. But even if it were true that such a decision could be made by a single participant (e.g., the national government), it implicitly assumes that the benefits or costs to a "community" can be assessed, i.e., that there is a "social welfare function." This, however, is probably the

most dubitable aspect[25] of the entire technique.

It follows that even under the most favourable assumptions (regarding quantification and measurability), cost-benefit analysis can at best be a method for defining preferences over alternatives for a given decision maker. If there is more than one decision maker (with power) involved in the situation (and we shall show below that this is always the case in airport location conflicts), cost-benefit analysis can neither prescribe nor describe decisions.

In summary, we have outlined a number of decision techniques which have been applied to airport location and expansion situations. These range from simple elimination, on largely technical grounds, to sophisticated forms of cost-benefit analysis. Simple methods generally cannot give unique decisions, while sophisticated methods usually make entirely unrealistic demands on quantification and measurement. Further, all such methods can at best be used to define preferences over alternatives for a given decision maker. Where there is more than one decision maker and where such preferences diverge, none of the decision techniques mentioned are descriptively or prescriptively adequate.

CHAPTER THREE
A MULTI-PARTICIPANT APPROACH TO AIRPORT PLANNING

The observation that various decision analysis methods applied to airport location and expansion problems are inadequate is obviously not at all new. In particular, politicians and administrators concerned with such decisions have often rejected findings of detailed, analytical studies, especially cost-benefit studies. The most famous case in point is again the rejection of the Roskill Commission Report by the British government. Similar studies were rejected in many other instances. As early as 1960, the Port of New York Authority based its call for a fourth New York airport on an economic impact study[26], but in spite of its extremely positive findings, politicians never accepted its conclusions. Similarly, results of studies in Boston, Miami, Southern California, and many other regions in the U.S.A. were rejected at the political level. In fact, Dallas, Fort Worth and Kansas City (both begun in the mid 1960s) were practically the last major airports built in the U.S.A. In Great Britain, the results of the Central England Airport Study were also rejected at the political level. Even in Canada, where Mirabel Airport was actually built, it was built at a site which analytical studies had argued was least desirable.[27] Obviously, analytical results have little or no input into the decisions which are actually made.

In view of this it seems reasonable to ask how such decisions are in fact arrived at. Curiously, there are relatively few studies of this question. There are, of course, a number of descriptions of political conflicts over the location of airports, such as that relating to New York's proposed fourth airport[28], those of the proposed third airport for London[29], or those of the proposed second airport for Toronto[30] (and implicitly for Mirabel[31]). However, these contributions are

generally exclusively descriptive and do not attempt any more formal analysis of the decision process which could be used for other, similar situations. Only Bromhead's[32] study of the third London airport controversy uses an analytical framework and attempts to show that governmental decisions during this conflict were incremental, rather than rational comprehensive[33]. While this may be valid and of considerable interest to scholars of public policy, it gives only a very general description of the decision-making process relating to airport problems and seems highly inadequate as a prescriptive analytical method[34].

Accordingly, we now propose an analytical model which can yield descriptive and prescriptive analyses of airport location or expansion problems. Subsequently, a number of empirical case studies of such location problems will be summarized and common elements will be identified and analyzed in terms of the model introduced below.

The above survey clearly indicated that one of the major disadvantages of past theoretical approaches has been the assumption that airport location decisions are made by a single, all-powerful decision maker rather than by a number of interacting participants. To remedy this situation we shall now present a theoretical framework which focuses on the <u>interaction of several participants</u> and explains eventual results in terms of this interaction. This method has been applied descriptively and prescriptively[35] to a considerable number of complex decision situations and seems entirely appropriate to explain and prescribe decision-making approaches for airport location problems.

On the basis of Simon's[36] model of complex problem solving, it has been argued[37] that the decision process between a number of participants is composed of three phases. These can be described as follows:

(a) information gathering, in which the participants in the decision situation gather information to be used in analysis and choice between alternatives;

(b) analysis, in which possible future outcomes of the decision situation are studied and the preferences of participants for these outcomes are estimated;

(c) interaction, in which the participants attempt to reach an agreement regarding a mutually acceptable outcome.

The boundaries between these phases are not rigorously defined nor do they necessarily follow in a predetermined sequence. Resolution of a particular decision situation often requires several iterations through the above phases by each of the participants over a period of time.

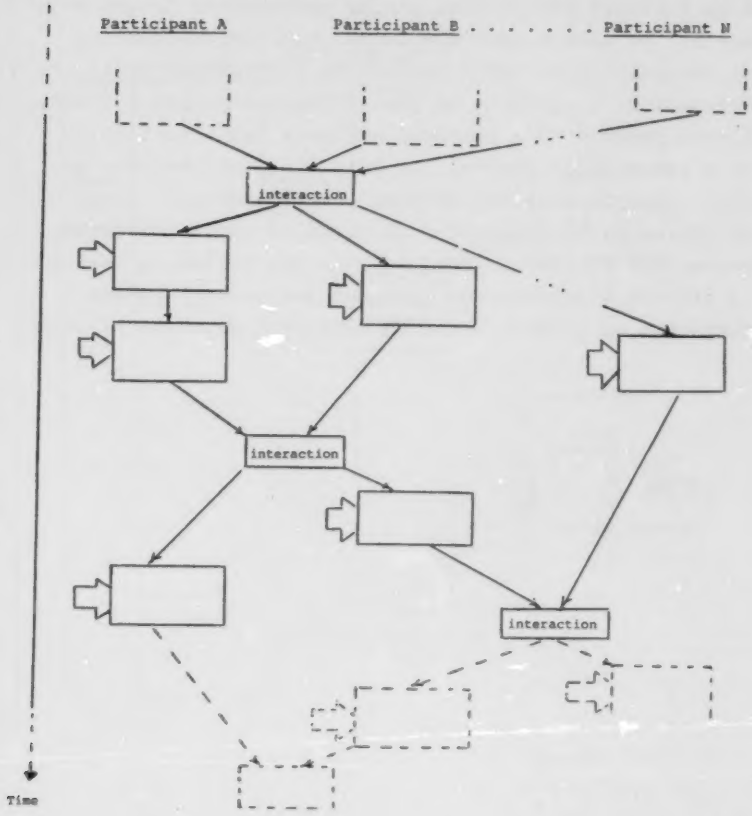
A diagram representing the process of resolution of the decision situation is shown in Figure 1. This diagram depicts the activities of several participants involved in the decision situation. In this context, participants are defined as individuals or organizations that have the power and interest to influence the outcome of the situation. The activities of the various participants are shown in Figure 1 unfolding down the page with the passage of time. The analysis phase for each participant is represented by a vertical series of frames, not unlike those in a movie. The input into the analysis from the information-gathering activity is shown by a arrowhead

to the left of each of these frames. The third phase of the decision process is indicated by boxes marked "interaction" in between the analysis frames. Not all participants necessarily take part in each interaction. The objective of the participants engaged in an interaction is usually to persuade or coerce the others to proceed to an outcome that they individually perceive as being the most favourable from their point of view.

The process of resolution moves through a series of analysis and interaction activities until all the participants settle on a particular outcome. During these activities, the flow of information to the particpants and the continuing interaction between them may lead to changes in their perceptions of the situation and of their objectives, intentions and preferences.[38] In many cases, these changes are essential to eventual agreement between the participants on an outcome of the decision agreement.

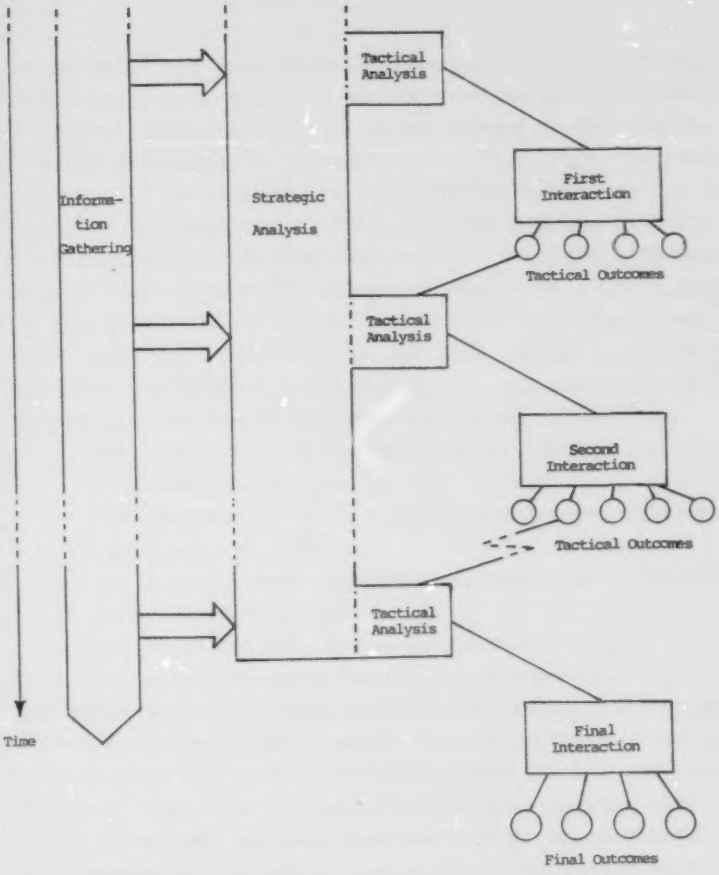
The process of resolution of complex decision situations has recently been analyzed in a further model.[39] It was earlier argued that this process can be regarded as a succession of "rounds"[40]. Each round is marked by an interaction between some or all of the participants and results in a tactical outcome (i.e., an interim outcome). The last round, however, brings about a particular strategic outcome (i.e., a final outcome). Obviously, a decision in each of the earlier rounds can have direct or immediate consequences for the participants and can also affect decision-making in future rounds. This latter type of consequence is modelled in terms of the effect which each tactical outcome can have on the eventual choice of a strategic outcome and is thus referred to as a strategic consequence. In effect, strategic consequences represent facilitating or constraining linkages between a given tactical outcome and possible strategic outcomes.

Fig 1: Model of the Process of Resolution of a Strategic Decision Situation



The entire conflict resolution process as described above and as seen by a single participant can be represented in the model of Figure 2. To make a decision in the conflict resolution process, the participant will begin with a strategic analysis of the situation, i.e., with an identification of participants; he will then proceed to a tactical analysis for a particular round or a sequence of rounds. In this tactical analysis he delineates possible tactical choices for himself and others and then evaluates those choices in terms of their immediate consequences and strategic linkages. In the following sections we shall present strategic and tactical analyses of common characteristics of airport location conflicts in terms of this model.

Fig. 2 The Conflict Resolution Process as seen by One Participant



CHAPTER FOUR
SUMMARIES OF CASE HISTORIES OF AIRPORT LOCATION AND EXPANSION CONFLICTS

In spite of the considerable number of conflicts relating to the expansion of existing airports or the construction of new airports, there is only a limited number of descriptive case studies available to the public. Undoubtedly, the best documented case is that of the proposed third airport for London.[41] Detailed information (although perhaps somewhat biased) is also available regarding the conflict over the proposed second airport for Toronto.[42] There are also some partial studies of the conflicts in Boston[43], New York[44] and Vancouver[45]. This, however, appears to be the full extent of the studies publicly available. Accordingly, the authors decided to carry out studies of four other controversies. They were:

- the conflict over the development of Tokyo's International Airport;
- the controversy over the proposed second major airport for Miami, Florida;
- the dispute over the proposed expansion of Vancouver International Airport;
- the conflict over the opening of the Island Airport in Toronto to scheduled commercial operations.

The first two cases were chosen because they had not previously been researched, because they were of national importance, and because data was easily available from journal and newspaper sources. The last two cases were chosen because they took place in Canada, because they had not previously been researched in a similar vein, and in the case of the Island Airport, because it is an on-going controversy to which our model could be applied predictively and prescriptively.

Since even short histories of each of these cases are quite lengthy, it was decided to append them to this report (Appendices A-D) and to give only summaries at this point.

(a) The Conflict over the Development of Tokyo's International Airport

In 1963, the Japanese government began its search for a new international airport site for Tokyo. After a period of conflict and the rejection of several alternatives, Prime Minister Sato announced in June of 1966 that a site in Chiba Province, near the town of Narita, had been chosen. The choice seemed appropriate since the government already owned about a third of the necessary land, anticipated relatively little problem in buying the remainder, and because the Narita region was economically depressed.

Perhaps the gravest error in the airport planning process was that the government apparently failed to consult most of the affected parties. Not only were the local farmers opposed to the plan, but they were almost immediately joined by labour unions and even the National Railroad Company. The government then negotiated a large number of land purchases successfully, but local municipal governments joined the ranks of airport opponents and prevented the construction of a vital fuel pipeline and of envisaged airport access systems by road and by rail. Meanwhile, the government had to battle radical airport opponents and local farmers to take possession of land necessary for the airport.

The airport had first been scheduled for completion by June of 1972. The actual airport was indeed completed by October 1973, but it took almost a further two years to construct a temporary fuel pipeline to the site and additional time to arrange for actual delivery. Finally, in May of 1977, police removed the last protesters from the site so that a test landing could take place. The airport was eventually officially opened on May 20, 1978. The opening had been postponed 12 times and was almost 6 years delayed. Costs of the project were assessed at around $3 billion, including interest payments.

(b) A Second Major Airport for Miami

In the middle of the 1960s, the Dade County Port Authority began to study plans for a possible expansion of Miami International Airport or for the construction of a new airport in the Miami area. This appeared particularly desirable in view of the large number of training flights carried out in the Miami area and in light of a projected rapid increase in such operations. Having considered several alternatives, the Authority eventually decided to build a second airport on a 38 square mile site north of the Everglades National Park. The envisaged site not only satisfied all technical criteria, but it was also very sparsely populated (thus, nc noise nuisance was anticipated), the land was privately owned (that is, easy to acquire by condemnation) and of submarginal agricultural value. Thus, sufficient land could be acquired cheaply to accomodate any conceivable growth of demand.

In February 1968, the Authority announced its plans for a training facility in the area. In July of the same year it published additional plans for what would have been one of the world's largest airports with a rapid transit link and a super-highway connection to Miami (a 40-mile distance).

The Port Authority claimed to have approval from all interested parties, among them the federal, state and municipal governments, a local Indian Chief, and even the superintendent of the national park. Construction was begun in September 1968.

In response to the publication of further plans, however, conservationists became interested in the proposal. They especially drew attention to the fact that the airport threatened the water run-off system for the national park, which was already in considerable danger from droughts due to the building of irrigation systems further north. At this stage, the federal Department of the Interior became interested and Congress began to hold hearings on the plans. Subsequently, the federal government authorized a major environmental study. Meanwhile, a dispute over the proposal ensued between the federal Department of Transportation and that of the Interior.

The Dade County Port Authority continued construction, but also authorized an environmental study of its own (by Overview Inc.). The conflict in Washington eventually led to a top level meeting which included the governor of Florida, at which it was decided to suspend all further

federal funding until the various studies being conducted were published. In spite of this, Dade County finished the initial training facility in November of 1969 and began operations (with Washington's assent) at the end of that month.

Early in December 1969 the environmental studies became available. They agreed on the fact that the airport as such presented no environmental threat, but that development of the surrounding area would damage the national park irreversibly. Accordingly, two reports rejected the airport proposal, while one (the Overview report) recommended a "stripped down, enclave-type airport." The latter recommendation was combined with a proposal to use airport revenues to buy all surrounding land and convert it into a conservation area. This plan was acceptable to most of the parties involved, and even received some support from conservationists. However, it was rejected by the federal government.

Apparently, the Nixon administration had decided in a top level meeting late in 1969 that it would be politically more expedient to block construction of the airport entirely (so as to be able to present a good environmental record). Eventually, Dade County and Washington came to an agreement which allowed the county to operate the facility purely for training purposes (at over 100,000 flights per year, as it turned out) until an alternative was found. Subsequently it was decided in 1979 to expand the existing Miami International Airport.

(c) The Proposed Expansion of Vancouver International Airport

In 1970, the Department of Public Works (DPW) of the federal government of Canada announced its intention to build a bridge from Vancouver to Sea Island on which Vancouver International Airport is situated. At the same time the Ministry of Transport (MOT) publicized plans to expand the airport and began expropriation procedures for two remaining parcels of land on Sea Island which were still in private hands. After expropriation notices were served late in 1972 and after lengthy expropriation hearings, it became clear that there was widespread public opposition to airport expansion plans.

The second expropriation hearing led to so much public protest that the Greater Vancouver Regional District (GVRD) brought the issue up at a Greater Vancouver Tri-level Committee meeting in March 1973. The Committee decided to form an Airport Planning Committee (APC) on which were represented not only the three levels of government (federal, provincial, regional), but also the City of Vancouver, the Township of Richmond, an organization of concerned citizens (the "Community Forum"), the Air Carriers and the B.C. Aviation Council. At the same time the MOT submitted five airport expansion proposals to the federal Department of the Environment for environmental evaluation. Some of the concepts were later modified and withdrawn. Meanwhile, the APC had become so entangled in disputes over its terms of reference that the Tri-level Committee decided to terminate the APC, only allowing it to finish studies then in progress.

A report was finally published in March 1976, but was somewhat obsolete since it only considered planning concepts which had been substantially revised by the MOT even before the report was finished. Thus, the report served primarily to demonstrate the immense difference in goals and opinions of those involved in the planning process. There were roughly three groups of participants, those proposing immediate expansion (MOT, DPW, Richmond, the Air Carriers, the BCAVC), those favoring a postponement of the decision (DOE, Ministry of State for Urban Affairs, GVRD, Vancouver), and those rejecting any expansion (Community Forum). The province would not commit itself to any particular option.

In May 1970, the MOT announced its intention to begin construction of an additional runway, but waited for environmental impact evaluations. Public hearings were conducted, and it was now clear that those rejecting the expansion were simply and successfully "playing for time". In 1978, Richmond decided to withdraw its support for an expansion and the Air Carriers were also backing off from the proposals. The MOT published another master plan for the airport in October of 1980, but it now appears that an expansion will only be undertaken if it is supported by virtually all of the participants.

(d) The Proposal to Use Toronto Island Airport as a Commercial STOL-Port

Since the late 1930s, Toronto Island has been the site of a general aviation airport. In conjunction with plans for a second international airport in Toronto, it was

suggested in the early 1970s that Toronto Island Airport (TIA) be expanded into a STOL-Port for the Quebec-Windsor corridor. This proposal was partly based on the fact that TIA was not profitable as a general aviation airport (mainly due to high access costs), that de Havilland Aircraft was to produce a new STOL aircraft, the Dash-7, and that such plans were compatible with high growth forecasts for air traffic.

Correspondingly, the proposal was generally supported by the federal Ministry of Transport, the provincial government of Ontario, municipalities in southern Ontario which were to be part of the STOL network, the Toronto Harbour Commission and de Havilland Aircraft. It was, however, opposed by parts of the local community and by Toronto City Council, which were concerned not only about pollution (noise and otherwise) by STOL aircraft, but also by commercial jet aircraft which might have begun to operate from TIA later.

Numerous studies were conducted between 1973 and 1977 (among them a test STOL service between Montreal and Ottawa), but no decision was reached. Finally, in 1978, the MOT announced that TIA would be upgraded for STOL service, but Toronto City Council immediately passed an amendment prohibiting the establishment of STOL facilities (the legality of this amendment was subsequently challenged). The MOT then changed its STOL proposal from an elaborate, province-wide service to a more limited one.

In the civic elections of November 1980, Art Eggleton replaced John Sewell as mayor of Toronto. Eggleton was

not strictly opposed to a Toronto Island STOL-port, but wanted full control by the City over the type of aircraft which would be allowed to operate from there. In June of 1981, City Council approved expansion plans conditionally and, subsequently, the Canadian Transport Commission selected an airline to commence an STOL service between Toronto, Montreal and Ottawa.

CHAPTER FIVE

A GENERAL STRATEGIC ANALYSIS OF CONFLICTS OVER THE LOCATION OF AIRPORTS NEAR MAJOR POPULATION CENTRES

The strategic analysis of conflicts is concerned with a definition of the primary issue and of linked decision situations, the identification of participants in the conflict, of possible strategic outcomes (i.e., scenarios with some chance of occurrence) and of the participants' preferences for these outcomes. Obviously, each conflict over the location of an airport near a major population centre is unique, especially with regard to linked decision situations; however, it is possible to enumerate a number of features which are common to all such conflicts and to perform a preliminary analysis based on these common features. This task will be undertaken in the present section.

Linked Decision Situations

It appears that airport location conflicts are generally marked by a strong linkage to other decision situations. In the case of the third London airport, for example, this linkage consisted mainly of the possible effects on airport planning of a national airports policy and of a regional development policy, both of which were concurrently being studied by the British government. It has been argued[46] that a national airports policy in particular could have been crucial for the choice of a site, since construction of a new airport in the Midlands would have severely affected traffic at one set of sites (the inland sites), but probably not at the Foulness (Maplin) site.

Similarly, planners for the second Miami airport neglected to consider the effects of choosing a site just north of the National Park, when an adequate water supply for the park was a

highly contentious issue by itself. Later, the report by Overview Inc. and its acceptance by Florida Governor Kirk did not take the political decision situation in Washington into account. For the Nixon administration, environmental protection had become a major policy and publicity strength and was far easier and better supported by a complete abandonment of the site than by the carefully considered plans of Overview Inc.

In the case of the second international airport for Toronto, perhaps the most important linkage concerned Ontario's provincial politics, especially in the run-up to provincial elections in 1975 and in the wake of the decision to abandon plans for the construction of the Spadina Expressway. Locally, the construction of a new airport was strongly opposed, and the provincial government was sufficiently worried about a possible election defeat to withdraw support for the airport proposal and thus to force the federal government to abandon its plans (at least temporarily).[47]

It is difficult to say whether the resolution of the Toronto Island Airport situation was significantly influenced by linked decision situations. Undoubtedly, the City Council elections of 1980 were of some importance, but the same resolution might have been obtained in any case. Even more difficult to evaluate is the connection between the Toronto Island Airport issue and the controversy over the continued residential use of the islands It can be conjectured that the latter controversy probably enhanced public attention to the airport proposed, but this would have to be substantiated in further research.

In the case of the Tokyo International Airport conflict and of the dispute over the expansion of Vancouver International Airport, it appears that there were no significant linkages to

other issues, except perhaps to the American use of Japanese airfields in the case of Tokyo and the rivalry between Richmond and Vancouver in the case of the Vancouver dispute.

Even this very limited survey of a relatively small number of cases suggests that an analysis of airport location issues which is carried out without regard to possible linked decision situations is likely to proceed on an unrealistic basis. The danger of this is perhaps best illustrated by the controversy over the third London airport. Originally, the British government selected a site at Stanstead, partly on the assumption that certain other sites (such as Foulness and the Isle of Sheppey) were in conflict with national defence needs. These needs were treated as given, not as results of concurrent decisions. Later, it emerged that the alleged defense needs were of little importance and could easily be resolved. Subsequently, this significantly weakened the credibility of the government's site selection process[48] which led to long delays and eventually the reversal of the decision for Stanstead.

Similarly the lack of study which the Dade County Port Authority had given to the question of adequate water supplies for the Everglades probably discredited the Authority so much in the eyes of conservationists that virtually no proposal supported by the Authority would have been acceptable to them.

It is quite clear that neglect of linked issues by any one of the participants may not only lead to choices which eventually turn out to be politically infeasible, but may also make the decision-making process very much less efficient in economic terms as well as in terms of delays. We shall see in the next section that such linked issues can introduce further problems

into the decision-making process, since they are often closely connected to tactical choices by the participants.

Participants

For the moment, let us assume that we are dealing with an airport location problem where significant linked issues either do not exist or have already been analyzed and taken into account so that the location problem can be treated effectively in isolation. Thus, a general strategic analysis of the problem can be performed.

Participants in a decision situation are individuals or groups with power to influence the outcome of the situation and with an interest in the outcome. Groups of individual decision makers can be regarded as single participants (or coalitions) if interactions of individuals in different groups are dominated by interactions between groups as a whole. Governments, for example, may consist of many departments and individuals with considerable internal conflict, but if a government as a whole comes into conflict with external actors, it will usually give a higher priority to presenting a united front than it will accord to individual or department aims. Thus a government can generally be seen as a single participant (there are, however, important exceptions, such as the conflict over the expansion of Vancouver International Airport).

A survey of cases documented here and elsewhere suggest that the following are generally participants in conflicts over the location of airports:

(1) Governments at various levels (e.g., federal, provincial or state, municipal or county) and quasi-governmental

bodies (e.g., port authorities).

(2) Users represented by commercial air carriers or general aviation councils, and other air-transportation related industries.

(3) Social and regional residents and other special interest groups such as industry and commerce as well as labour unions, whose welfare would be directly or indirectly affected by the construction (or lack of construction) of an airport.

In addition to these common participants, there can, of course, be any number of other participants in particular cases, such as groups of environmentalists or political opposition groups (such as the former Vietnam War protestors in the case of the Tokyo airport).

This listing of participants is largely definitional and intuitive, but agrees very well with other sources using different methods. A study of the decision-making process in airport planning and design (with particular reference to the case of Mirabel Airport)[49], for example, identifies (for the Canadian environment) three levels of government - federal, provincial, municipal - individual airlines and air transport-oriented industries. It does, however, not recognize local citizens as active participants (although a process of consultation is considered), an assumption which should certainly be examined and thus not imposed on an initial model. Lichfield[50] gives a much more detailed listing of potentially affected groups (not necessarily with direct power, i.e., not necessarily participants) for the case of the third London

airport controversy, which include governments or government agencies, airlines, passengers, residents, taxpayers and the general public. Lichfield divides these into producers and consumers, a categorization whose utility we fail to see in view of the fact that benefits and costs accrue quite differently to individual groups in these categories. In our model some of these groups are not direct participants, but ar taken as represented (for better or worse) by participants such as airlines (in the case of passengers) or governments (in the case of taxpayers and the general public).

Returning to our case studies, it can be seen that our categorization encompasses most of the relevant participants. In the case of the Tokyo conflict, for example, the following appear to have been participants:

(1) - the Japanese government
- the government of Chiba Prefecture (Province)
- two municipal governments

(2) - the national and international airlines

(3) - local residents, especially farmers
- unions
- local industry.

Not included in this listing are the young, radical protesters who were undoubtedly a special characteristic of that situatio

In the conflict over the site of the second airport for Miami, the participants seem to have been:

(1) - Dade and Collier counties as represented by the Dade County Port Authority
- the state Government
- the federal Government

(2) - the commercial airlines, especially those with training operations in Miami

(3) - local industry
- National Park supporters.

This listing does, however, not adequately reflect the split which developed between two federal government departments (the Department of the Interior and the Department of Transportation). Again, this is clearly a special characteristic and can thus be neglected in a general model of airport location conflicts.

Outcomes and Preferences

We could continue such a case-by-case verification, but will instead attempt to pursue the construction of a general strategic model by identifying possible outcomes. One could attack this problem by assuming that in a given situation n different sites are being considered for airports of different designs. This, however, would lead to a hopelessly complex model and does not seem to represent the actual conflicts very well. It appears that conflict usually does not arise when sites are being considered, but when a particular location is being proposed as a site. Our model will reflect this feature; accordingly, one might consider the following five categories of possible final outcomes (each such category shall be referred to as a "strategic outcome"):

(A) An airport is proposed for a given site and is built without major opposition.
(B) An airport is proposed for a given site and is built in spite of major opposition.
(C) An airport is proposed for a given site, but is not built due to opposition.
(D) An airport is proposed for a given site, is partially built (or significant steps such as land acquisition are taken towards its construction), but is abandoned due to opposition.
(E) An airport is not proposed or a proposal is withdrawn for a given site.

These are obviously extremely general categories, but they certainly reflect some possible scenarios and could subsequently be refined as appears necessary.

Undoubtedly the most difficult step in the construction of strategic models of conflict is the attribution of preference-rankings of outcomes for the participants previously identified. Obviously, one could proceed on a case-by-case basis, but this would diminish the generality of the model. Alternatively, one could identify all logically possible rankings and analyze all conceivable combinations. This task would obviously exceed our analytical capabilities.

The procedure chosen for this study is essentially a compromise between these extremes: namely, we shall assume that each participant has a basic "attitude", as expressed in his preference ordering, towards a given proposal. Generally, this attitude is assumed to be either supportive or opposed. In the case of governments we shall further assume that they can also be neutral towards a given proposal, i.e., refuse to

commit themselves. On this basis it is relatively easy to construct plausible preference orderings of the given strategic outcomes for each participant with a given "attitude". A list of such orderings is shown in Table 1.

Strategic Analysis

The listing as such is, of course, of relatively little interest, since it only represents assumptions about particular preferences. It can, however, be usefully applied in two ways. With respect to a given case, one could perform a very simple strategic analysis by simply identifying the participants and their corresponding "attitudes" and analyzing the resulting "game" (for example, in the way suggested by Radford[51]). This approach was, in fact, taken in an earlier, detailed analysis of the conflict surrounding Toronto's proposed Pickering Airport.[52] Alternatively, one could take a more general approach, make some assumptions about the decision power of certain categories of participants, and examine the resulting strategic interaction. We shall now follow the latter course.

The actual outcome of a strategic conflict crucially depends on the decision power of each of the participants. One very important aspect of this decision power is related to which of the outcomes a participant can secure for himself unilaterally, i.e., regardless of the choices of other participants, as opposed to outcomes for which he requires the cooperation of other "players".[53] To represent this aspect one may refer to a participant's "security level" as the most preferred outcome which that participant can obtain unilaterally. Obviously, a player should not accept an outcome below his security level, since he can definitely obtain a more preferred outcome (by unilateral choice), at least as long as his preferences have not changed.

TABLE 1

POSSIBLE PREFERENCE ORDERINGS FOR STRATEGIC OUTCOMES

	STRATEGIC OUTCOMES				
	Most Preferred				Least Preferred
PARTICIPANTS	(1)	(2)	(3)	(4)	(5)
Supporting Governments and Government Agencies	A	(B or C or E)*			D
Opposing Governments and Government Agencies	E	C	D	B	A
Neutral Governments and Government Agencies	(A and E)		(B and C)		D
Supporting Air-Transport Related Industries	A	B	[D or (C and E)]		
Opposing Air-Transport Related Industries	E	C	D	(A and B)	
Supporting Citizens and Special Interest Groups	A	B	(C and E)		D
Opposing Citizens and Special Interest Groups	E	C	D	(A or B)	

*(X or Y) implies that the preference ordering for X and Y is either not defined or unknown.

**(X and Y) implies that the participant is indifferent between X and Y.

Let us now attempt to identify security levels for the participants (with a given attitude) enumerated in Table 1 above. Initially, we shall make the assumption that it is always a government or a government agency (i.e., a participant from category (1) which proposes a major airport and which can withdraw such a proposal at any time. Usually, the laws of a country stipulate which level of government fulfills this function. In Canada, for example, this is the federal level, whereas in the U.S.A. major airports can be proposed by any one level, but are usually in the hands of county or state-based authorities. In most other countries, national governments and their authorities have the power to propose airports.

The remaining levels of government usually have an effective (not legal) veto power. For example, in the U.S.A., airports are generally proposed by regional authorities, but they require the cooperation of the federal government to obtain control and transition zone information. In Canada, the federal government proposes airports, but cooperation of provincial governments is necessary for appropriate zoning laws, surface access, etc.[54] In particular jurisdictional circumstances, it is, of course, thinkable that a given level of government may not have such effective veto power, but this shall be treated as an exception, rather than as a common feature. The corresponding security levels for governments are shown in Table 2. Security levels for the other participants are shown in Table 3.

It is now possible to draw some conclusions from this very "rough" analysis of strategic aspects of airport location conflicts. For example, it can be seen that a government with the power to propose construction of an airport is extremely

TABLE 2

SECURITY LEVELS OF VARIOUS GOVERNMENTS

	STRATEGIC OUTCOMES				
	Most Preferred				Least Preferred
PARTICIPANTS	(1)	(2)	(3)	(4)	(5)
Supporting Governments and Government Agencies (Proposing)	A	(B or C or (E))*			D
Supporting Governments and Government Agencies (Not Proposing)	A	((B) or (C) or (E))			D
Neutral Governments and Government Agencies (Proposing)	(A and (E))		(B and C)		D
Neutral Governments and Government Agencies (Not Proposing)	(A and E)		((B) and (C))		D
Opposing Governments and Government Agencies (Proposing)	(E)	C	D	B	A
Opposing Governments and Government Agencies (Not Proposing)	E	(C)	D	B	A

*Outcomes representing a participant's security level, i.e. the most preferred outcome which that participant can secure unilaterally, are encircled.

TABLE 3

SECURITY LEVELS FOR NON-GOVERNMENTAL PARTICIPANTS

PARTICIPANTS	STRATEGIC OUTCOMES Most Preferred (1)	(2)	(3)	(4)	Least Preferred (5)
Supporting Air Transportation-Related Industries	A	B	[(D) or ((C) and E)]*		
Opposing Air Transportation-Related Industries	E	C	(D)	(A and (B))**	
Supporting Citizens and Special Interest Groups	A	B	(C and E)		(D)
Opposing Citizens and Special Interest Groups	E	C	D	(A or (B))	

*Outcomes representing a participant's security level, i.e. the most preferred outcome which he can secure unilaterally, are encircled.

**Security level could be either B or D, depending upon strength of industry.

powerful in as far as its veto power is concerned, but relatively weak in terms of its power to actually bring about construction of an airport. The primary reason for this is obviously that a number of other participants will generally have equal power to block construction of an airport, even though they may have no power to propose such an undertaking. In fact, the only advantage which the power to propose confers to a government as compared to other governments is that the proposing government can always enforce the "status quo" (i.e., no proposition is made or the proposition is withdrawn). This is, of course, only an actual advantage if that government is not an all-out supporter of a new airport.

Neutral governments are not very powerful as long as they are seen as truly neutral, that is, as indifferent between construction or the "status quo". It follows that such a government could achieve significant bargaining power (possibly in linked situations) by taking a supporting or opposing attitude and that true "neutrality" will be relatively rare.

Interestingly, opposing governments are in a situation not altogether different from opposing air transportation-related industries, except perhaps insofar as governments can usually veto airport proposals at a very early stage, whereas industry is probably not always able to veto proposals, but can probably often bring about delays and even halts of construction at a later stage. This, however, depends somewhat on the strength of that industry vis-à-vis the proposing government. Particularly interesting in this connection is the position of foreign airlines as compared to that of national airlines. If one assumes that the former are much weaker than the latter in

relation to the proposing government (as would almost always be the case in countries where the proposing government is also responsible for the national airlines, e.g., Canada, Japan, Britain), then it is clear that the position of the national airline may well be decisive, and that attitudes of international airlines will be largely irrelevant.

As far as citizens and other special interest groups are concerned, our model leads to the conclusion that they have little or no direct strategic power. On their own, such groups cannot do much to bring about any particular outcome. This may, at first sight, seem quite absurd in view of the effects which community action and citizens' protests appear to have had on airport construction. A closer examination of actual cases, however, reveals that this appearance of effectiveness is misleading. In relation to London's third airport, for example, changes of policy generally corresponded to changes of governments (brought about by entirely unrelated circumstances). In Tokyo, it was not the protest of farmers and young radicals which almost prevented construction of the airport, but it was the resistance of local municipalities combined with labour unions. As soon as the latter resistance had been overcome, the way for an opening of the airport was cleared and citizens could at most marginally delay it.

Similarly, in Miami, it was not the pressure of environmentalists per se which prevented the site from being used for a major international airport, but it was the effect of that pressure on the federal government. In relation to the proposed second airport for Toronto, the same could be said for the provincial government. Even in Vancouver, it appears that reticence of local and regional governments was much more important than

action by the "Community Forum" as such.

This is not to say that local citizens and special interest groups are powerless in relation to airport proposals, but it strongly indicates that such groups derive power not so much from direct action, but from influencing various levels of government. In view of their relative lack of direct power, such groups must choose between three possible ways (which are not exclusive, but can, and in general will, be taken together) of influencing the strategic outcomes. First, such groups can form coalitions with more powerful participants. As seen above, such coalitions between citizens' groups and one or more levels of government are formed frequently and will generally be extremely effective. Often, this is combined with the second method of gaining power, namely, to link the airport dispute to other issues in which the citizens or special interest groups are powerful. In Tokyo, for example, the Vietnam War and general discontent with the "establishment" presented such a issue. In the case of Miami, the quickly rising importance of environmental problems combined with the long-standing disputes over water supplies for the National Park were used by airport opponents as issues through which they could influence decisions regarding the airport. Thirdly, participants with little or no strategic power can often exert considerable tactical pressure, for example, by bringing about delays of certain decisions or imposing high immediate costs on particular actions by other participants. Although such tactics may not definitely bring about a different strategic outcome, they may make it so costly for other participants to seek a given strategic outcome that they abandon their initial plans. In the following section, we shall explore such tactical features of airport location decision-making in more detail.

CHAPTER SIX
SOME TACTICAL CONSIDERATIONS

So far this study has concentrated on the strategic aspects of airport location conflicts; that is, on possible longer term results of such conflicts. In this context, we have constructed a general model representing possible results as strategic outcomes determined by a set of participants. However, it is obvious that such outcomes do not obtain from a single, all-encompassing decision (either by a single participant, or as a joint decision of all participants), but from a long sequence of decisions. It can be argued that these sequences of what we refer to as tactical decisions relate to a succession of rounds of bargaining. Each such round is marked by an interaction between some or all of the participants and results in a tactical outcome arising from the tactical decisions made by the participants in that round.

The model of complex decision-making outlined above indicates that tactical decisions can be viewed as being made with regard to two factors: the immediate consequences of a tactical choice and the strategic consequences of this choice. While the former refers to those consequences of tactical outcomes which result regardless of subsequent decisions, the latter pertains to the effects which a tactical choice is expected to have on the eventual resolution of a conflict, i.e., on the choice of a strategic outcome. Obviously there can (and generally will) be some conflict between evaluations of immediate and strategic consequences by a given participant. In that case, the tactical choice must represent an acceptable compromise between the desire to obtain a favourable strategic result, and the wish to avoid immediate costs resulting from tactical decisions.

Below, we shall initially consider some general characteristics of the entire tactical decision-making process of airport location conflicts. Thus we shall examine the "round structure" of that process and study the participation of the "players" in a given phase (i.e., a set of rounds) of the resolution process. Subsequently, possible tactics and results of such tactics for the participants will be considered briefly. However, this discussion is necessarily limited, since in each instance, actual tactical choices are highly dependent on numerous factors specific to a given situation.

The Round Structure of the Resolution Process

It can be argued[47] that the decision-making process for airport location and construction is roughly divided into three phases. The first is concerned with establishing whether a need exists for a new airport in a given region, and whether this need can be met by a reorganization of existing facilities or whether additional facilities are required. If it has been decided that a need exists (at least potentially), the second phase of the decision-making process commences. This is concerned with establishing possible characteristics of the required new development. Thus, the envisaged type of usage (e.g., air carrier, general aviation, training, etc.) or the facility's capacity and rough layout, etc., have to be considered. This is intimately connected with the third phase of the process which is concerned with the location of the envisaged facility. This, of course, includes a consideration of the possibility of expanding an existing airport in a given location as well as a study of possible additional locations and of abandoning existing locations.

A successful completion of these three phases then leads to the more detailed operational planning and design. Obviously these phases are not strictly sequential. They tend to be iterative, but, at least initially, they are quite distinct. They differ especially insofar as the participants in the rounds of each phase can be different. Ordinarily, the group primarily concerned with the first phase (that of establishing a need) comprises only that agency responsible for proposing new airport developments. There may, of course, be some participation by other agencies (particularly the related industry and specialists in other governments), but they generally interact only with the "proposing agency", and it is understood that the decision on "need" rests firmly in the hands of that participant.

In terms of our model, this implies that this first phase should be relatively free of open conflict, since it is essentially a single participant decision situation. This, of course, does not deny the possibility of organizational conflict within that agency. We shall not address ourselves to this question in this study, although it could potentially be very important. This tendency for the first phase to be relatively free of conflict is further enhanced by the fact that many of the decisions surrounding the question of need appear to be highly technical, rather than political. For example, traffic growth forecasts are made using sophisticated mathematical techniques which are well beyond the comprehension of those not intimately connected with the decision-making process and its primary participant.

Once this participant has determined that a substantial need for a change from the "status quo" exists, the next phase of deciding on rough characteristics can be entered. At this

stage, the primary decision maker of the previous phase, i.e., the "proposing" participant (in Canada, for example, Transport Canada) faces a critical tactical choice. Either he can attempt to establish an outline of characteristics unilaterally (and usually in some degree of secrecy), or he can call on the cooperation of other participants for this phase. Until fairly recently, governments generally chose the former route. In Tokyo and Miami, for example, cooperation of other agencies and of the public was only sought after initial characteristics had been established. A similar approach was chosen by the Canadian federal government in Montreal (Mirabel). In New York (extension of Kennedy Airport into Jamaica Bay), Vancouver (expansion of Vancouver International Airport), Toronto (second airport) and in the case of the Toronto Island Airport, however, the proposing government invited participation by others at a much earlier stage.

In terms of its strategic consequences, the latter, consultative approach is, of course, potentially very attractive to the proposing agency. It enables other participants to design and modify plans in a way which seems desirable to them, thereby increasing the chances that the development can eventually go ahead without major opposition. On the other hand, the consultative approach has potentially disadvantageous (for the proposing agency) immediate consequences. Namely, if one or more of the other participants decides to take an opposing attitude towards the airport development, he or they could begin to choose tactics designed to constrain the envisaged development even at such an early stage. For example, these participants could delay the planning process or could search for linked decision situations which might have a constraining effect on the airport development. It appears that this happened in the case of the expansion of Vancouver International Airport and perhaps also the Toronto Island Airport.

Obviously, the proposing agency can also attempt to find a compromise between these two extremes. For example, it can attempt to enlist the participation of other governments and of the air carriers, that is, not aim for participation of the general public. This might seem all the more attractive since many of the questions about airport characteristics are again highly technical and complex and can easily give rise to considerable delays if they become the subject of public controversy. Also, it might not be difficult to avoid direct public participation, since interest in these technical matters might be very low as long as a particular location or set of possible locations has not been selected. On the other hand, it is clear that this type of tactic has potentially highly disadvantageous immediate consequences, because groups not included in the consultation process at that stage may later become participants and then claim to have been deliberately excluded. Also, as mentioned above, exclusion of particular participants in this phase of decision-making prevents the modification of options in line with those participants' desires, and may thus make it more difficult to find a jointly acceptable final outcome.

If the second phase of decision-making has involved a large number of participants, it is clear that this will a fortiori be the case in the third phase concerned with the location of facilities. Alternatively, if the decision-making process up to that point involved only one or a few participants, the agency or agencies involved will again face the tactical problem of deciding on wider participation. The immediate and strategic consequences are roughly the same as outlined above, except that the values at stake for all concerned become much larger. In particular, local citizens will have a very strong

interest in being involved in this phase; to exclude them from participation might thus be even more dangerous. On the other hand, there are presumably strategic benefits in limiting the number of participants (from the point of view of the proposing agency) insofar as it might make it easier to find a jointly acceptable outcome. This is, of course, irrelevant if one of the participants excluded has effective veto power (those participants should, therefore, always be included), but it could be important in the case of the exclusion of participants with very little direct strategic power (e.g., local citizens, foreign airlines, very weak governments).

This leads to the conclusion that, from the point of view of the proposing participant, it might seem best to form the smallest "winning coalition" (i.e., a coalition including all those with effective veto power) possible.[56] The primary problem with this tactical approach is that it is quite possible to underestimate the veto power of a particular group, and that small coalitions can always be endangered by defections of one or more participants. In Tokyo, for example, the Japanese government clearly underestimated the veto power of the local municipalities, the province and the unions. Similarly, in Miami, the Dade County Port Authority made a serious mistake in neglecting the pressure which environmentalists were able to exert on the federal government, leading to its ultimate defection from the coalition of airport supporters.

So far, we have looked at the decision-making process as a strict sequence of three phases, but as mentioned above, this is clearly an oversimplification. Although the process must always start with the identification of a need and then progress to considerations of location and characteristics, it may well return to earlier phases. To some extent this is desirable and unavoidable; however, it can also become a tactical tool,

especially for airport opponents. In Vancouver, for example, it turned out to be impossible for the Airport Planning Committee to arrive at any recommendation because certain parties (e.g., the "Community Forum") wanted to consider (or reconsider) questions of need while others (e.g., the Ministry of Transport) only wanted to study characteristics.[57] The Roskill Commission in London was assailed on similar grounds insofar as its terms of reference did not include the possibility of not building a third airport at all, even though that was clearly a feasible course of action.[58]

Quite obviously, it would be desirable if the decision process could indeed be an orderly progression of rounds with a reasonable degree of consensus being reached at the end of each stage. On the other hand, tactics which might facilitate such a process (i.e., full consultation and veto power for all potential participants) also open numerous tactical possibilities for delay and blocking.

Some Categories of Tactics

Let us now briefly consider some categories of tactics which have been used in a number of airport location conflicts. From the point of view of airport supporters, perhaps the most extreme tactic which has sometimes been applied is that of a *fait accompli*. In Tokyo, for example, the Japanese government portrayed its site selection as irreversible and began expropriation procedures with as short a notice as possible. Similarly, the Dade County Port Authority first published details of the planned airport in July of 1968 and began runway construction in September of 1968.[59] In a number of cases (e.g., Toronto), governments have, alternatively, acquired

land by voluntary sale or expropriation as quickly as possible after publishing airport development plans, leaving virtually no time for public participation before irreversible steps were taken. Obviously, such tactics can only be used if the planning process is carried out in relative secrecy, resulting in the possible disadvantages mentioned above. Further, this type of tactic can generally only be reversed at great cost (which is why it can be a very strong tactic) and is therefore highly disadvantageous if strategic plans have to be changed.

On a much less coercive level than a fait accompli, airport proponents can use various tactics of persuasion and inducement. The former is obviously the most widely used tactic and thus requires little comment. Inducements (i.e., side payments) are rarely - if ever - mentioned explicitly. Only the report of Overview Inc. for Miami's second airport was very open in this regard. The idea was to gain environmentalists' acceptance of the airport proposal by offering to buy adjacent land and to convert it into a conservation area.

Implicit side payments are, however, very common. For example, the Japanese government paid over $700 million to local municipalities for various rights of way. It was generally recognized that this sum was far higher than the actual value of these rights, and that a significant part of it was indeed a "side payment" for allowing airport operations to begin. Less direct arrangements were reached between federal and provincial governments in Montreal and Toronto. In both cases, the federal government agreed to sites which were more costly for it to develop than others, but which were preferred by the provincial governments.[60]

Perhaps the greatest disadvantage of such tactics is that they are often regarded as somewhat "illegitimate", that is, equated to "bribes". It is felt that an alternative should be selected on its objective merits and should not be subject to political maneuvering. However, as argued at length above and elsewhere[61], objective rationality is not a very useful concept in complex decision situations involving many participants with differing values. The merits of a particular alternative, i.e., the rationality of the choice, can only be defined subjectively, and there is no reason why such merits should not be altered by explicit side payments. Inducements can only be regarded as "illegitimate" if the participants claim to make objectively rational choices - a claim which we shall consider in more detail below.

Opponents of a particular alternative have, of course, a very large array of possible tactics open to them, ranging from persuasion to threats and delays. Again, persuasion is well understood and non-controversial. Threats, on the other hand, are not normally acknowledged as such, but seem to occur frequently. In the case of Miami's second airport, for example, the federal Department of the Interior threatened to block the half-finished airport development entirely unless Dade County agreed to a compromise solution. Similar pressure was put on the Japanese government by local municipalities and by the provincial government of Ontario on the federal government of Canada in relation to the proposed second airport for Toronto.

Normally, threats tend to be relatively high risk tactics since it may be costly for the threatening party to actually implement the predicted actions. In the case of opposition to airport sites, on the other hand, threats are often not very

costly, particularly if public opinion endorses the tactic. This was undoubtedly true for Ontario's opposition to federal government proposals and similarly was probably true in the case of the opposition of the City of Toronto to the establishment of a STOL-port on Toronto Island. In fact, our case studies indicate that any one of the major participants (e.g., governments and airlines) can usually issue threats which are sufficiently credible and forceful to prevent choice of any particular alternative except the status quo.

Less powerful participants, however, usually do not have the ability to make forceful, direct threats. The case of Tokyo's second airport is perhaps the most extreme example. Even the very large and radical opposition of residents and students - clearly prepared to use extreme violence - was unable to deter the Japanese government from the course of action it had chosen. Similarly in Montreal and Toronto, local citizens were unable to change the federal government's decision in spite of considerable pressure.

It appears that such weak participants have powerful tactics primarily in terms of their ability to form coalitions (dealt with above) and because of their ability to delay implementation. In Vancouver, for example, such delay seems to have actually led to a different strategic outcome, and there is little doubt that, if the Japanese government had foreseen the years of delay imposed by local residents and governments, it would have abandoned its plans immediately.

While it should be recognized that delays can be powerful tactics, it should also be admitted that they are highly

inefficient (in the economic sense). Regardless of the outcome which eventually obtains, all participants would presumably be better off if it could be reached without undue and financially costly delays. It could be argued that, from the point of view of local residents, delays might be advantageous in themselves (since they at least put off the opposed development for some time), but this gain is probably largely outweighed by costs which such delays impose on the residents in financial and psychological terms.

Clearly, the strategic weakness, coupled with the considerable tactical strength of such groups, introduces inefficiencies into the decision-making process; to avoid these would be in the interest of all concerned, but may be difficult to accomplish.

CHAPTER SEVEN
SOME PRESCRIPTIVE REMARKS

So far, we have attempted to restrict ourselves to pure descriptions of certain aspects of airport location problems. We shall now use these descriptions as the basis for a few prescriptive remarks, some of which are addressed to the Canadian context.

At the end of the previous section we touched upon the possibility of inefficiencies in the airport-related decision-making process. It was shown that this can be due to the fact that certain groups have little strategic power and that their tactical choices are restricted to those which necessarily introduce inefficiencies. The obvious solution to this problem would be to give such groups power over the determination of strategic outcomes, similar, for example, to the power which governments at various levels already possess. However, if this route is taken to the extreme, it ultimately implies that every citizen could have potential veto power - clearly an unacceptable situation since any majority would be no stronger than a single individual.

Fortunately, the airport location problem differs, in this respect, in no significant way from any other political decision problem. Clearly, mechanisms for resolving such problems are already in place (imperfect though they may be). It thus is surprising that they appear to work reasonably well for most normal political problems, but fail in the case of airport location problems.

Probably one of the reasons for this is that the construction or expansion of major airports is a rare event for which standard decision-making procedures have not been elaborated and possibly

cannot be found. However, another reason for the failure of the normal political process may be the way in which airport location decisions have generally been evaluated and justified. Usually, each of the participants has attempted to show that a proposed alternative is or is not, in the "common interest" - the Final Report[62] of the Airport Planning Committee in Vancouver provides an excellent illustration. As mentioned above, the participants tend to argue in terms of objective rationality, rather than in terms of subjective advocacy. This leads to such elaborate arguments as presented by the Roskill Commission, the Central England Airport Study or the studies presented to the Airport Planning Committee in Vancouver. Implicitly or explicitly, these attempt to establish a "social welfare function" and measure alternatives against it - a difficult undertaking, as argued above.

Fortunately, such efforts should only be of limited significance in representative democracies with a number of governments at different levels. There, "social welfare" is established by bargaining between governments at different levels and between governments and their constituents. Obviously, this assumes that each government has at least some bargaining power and that governments are responsive to their constituents. While the former assumption generally appears to be satisfied, the latter sometimes does not seem to be true. Part of the reason for this is that each government feels compelled to justify its position in terms of the "common good" rather than in terms of advocacy of the aims of its constituents.

This has two significant consequences, both of which were mentioned above. First, it may imply that citizens come to the conclusion (after hearing public arguments) that the

various governments are not truly representing their interests. The normal course of action would be to attempt to lobby the relevant governments. However, when this offers little hope of success (for whatever reasons), and when other tactics (such as the formation of community action groups) appear more promising, the latter will be taken and inefficiencies will be introduced into the decision-making process. The second consequence of the fact that governmental positions have to be justified in terms of an overall "social welfare function" is that it makes it very difficult to use inducements. A government (or any other group or agency) which has argued in terms of a "social welfare optimum" can hardly openly change its position after having been offered a side payment without being accused of hypocrisy. Similarly, a government cannot justify giving a side payment if it previously claimed that a particular alternative represented a "social optimum."

Bargaining is theoretically eliminated where there is no advocacy of subjective values. Thus debates over airport locations have been carried out on a highly technical level, rather than in terms of the specific benefits or costs incurred by a particular constituency. This is perhaps not a very serious problem in relatively small countries with a very homogeneous population (e.g.,Denmark) where local and national interests often overlap or even coincide. In a very large and heterogeneous country such as Canada, on the other hand, bargaining between various levels of government is an obvious necessity. National, regional, and local interests can often only be brought into agreement by a process of equalization (not in the strict financial sense), that is, by the payment of inducements to different constituencies.

The Canadian political system obviously recognizes this fact in its federal structure, and various levels of government have generally not found it difficult to argue in terms of the interests of their constituents. With respect to airports, this has not usually been the case; recently, however, there seems to have been an adjustment of policy, at least at the federal government level. For example, a speech of the Pacific Air Administrator of Transport Canada to the British Columbia Aviation Council was recemtly quoted as follows"

> "If it turns out that the majority of the people of British Columbia feel that price to service the growing demand for aviation activities at Vancouver - in terms of added aircraft noise, traffic congestion, land use and whatever the adverse by-products - if it was decided that price was too high and it would be better Seattle should have the economic benefits, or of (sic) the gateway to the Pacific for Canada should be divided up and perhaps Vancouver should be overflown so that this activity should happen in Calgary, then I am here to tell you (the BC Av C) that I personally would have no interest whatsoever in jamming a new terminal or a parking facility down the throats of a population that didn't want it."[63]

Clearly, it is recognized that the federal government must advocate the national interest and must have a leadership role with respect to airport planning. However, it is also stated that this implies the representation of regional and local interests in such questions by the relevant governments which must powerfully participate in the decision-making process.

The next question is then how this policy should be communicated to other governments, interest groups and citizens, and what position Transport Canada, for example, should take in the bargaining process. While this question is obviously beyond the realms of the current study, it seems clear that the federal government should not create the impression of one which is always and unconditionally interested in further costly airport developments. Instead, it should aim to be perceived as representative of national interests (rather than of local or regional interests as such), which implies a careful weighing of advantages which might flow from new or expanded airports and of costs - in direct terms and in terms of compensation to other groups - resulting from such developments. In short, it should be (and be seen to be) a bargainer advocating the interests common to all Canadians.

NOTES

(1) For additional details see McCrimmon (1973).

(2) See, for example, Civil Aviation Authority (1974).

(3) Ibid.

(4) Environmental Studies Board (1971).

(5) Massachusetts Technical Advisory Committee (1970).

(6) Toronto Area Airports Project Team (1972).

(7) Bambiger and Vandersypen (1969).

(8) This approach has been used, for example, in Bromhead (1973).

(9) Keeney (1973).

(10) Civil Aviation Authority (1974), p. 125.

(11) Ibid., p. 126.

(12) Foster and Beesley (1963).

(13) E.g. Self (1970) or Hall (1970).

(14) Los Angeles Department of Airports (1972).

(15) Ross et al. (1976).

(16) Malin and Piovia (1960).

(17) Intergovernmental Committee for the Montreal International Airport (1968).

(18) Coghlin et al. (1970).

(19) De Neufville and Yajima (1971).

(20) Howard (1972).

(21) Commission on the Third London Airport (1971).

(22) McKie (1973), p. 165.

(23) This was earlier admitted by others, e.g., Lichfield (1971), but was hardly even taken into account in any actual studies using cost-benefit analysis.

(24) Civil Aviation Authority (1974), p.125.

(25) Cf. Arrow (1951); for a more recent comment see also Self (1970).

(26) Port of New York Authority (1961).

(27) Stewart (1979) p.26.

(28) Cavanaugh (1978).

(29) E.g. McKie (1973), Bromhead (1973).
(30) E.g. Budden and Budden (1973), Stewart (1979).
(31) Op.cit.
(32) Bromhead (1973).
(33) Braybrooke and Lindblom (1963).
(34) Giesen and Radford (1981).
(35) For some examples and further references see Radford (198
(36) Simon (1960).
(37) Radford (1977).
(38) Ikle (1964).
(39) Radford and Giesen (1981).
(40) Radford and Fingerhut (1979).
(41) E.g. McKie (1973), Bromhead (1973).
(42) E.g. Budden and Budden (1973), Stewart (1979).
(43) Nelkin (1974).
(44) Cavanaugh (1978).
(45) Airport Planning Committee (1976) and St. Pierre (1977).
(46) Cf. Lichfield (1971) and MacEwen (1970).
(47) Cf. White (1975).
(48) McKie (1973), pp.98-100
(49) Neales (1972).
(50) Lichfield (1971).
(51) Radford (1977).
(52) Starr (1976).
(53) Howard (1971).
(54) Neales (1972).
(55) Ibid.
(56) This would clearly be in agreement with more abstract game-theoretical predictions, cf. Brams (1975).
(57) Airport Planning Committee (1976).
(58) Self (1970).
(59) Aviation Week and Space Technology, October 9, 1978.

(60) Stewart (1979).

(61) Howard (1971).

(62) Airport Planning Committee (1976).

(63) Vancouver Sun, October 8, 1980, p.B11.

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APPENDIX A

THE CONFLICT OVER
THE DEVELOPMENT OF TOKYO'S INTERNATIONAL AIRPORT

During Japan's economic boom of the 1960s, it became clear that Tokyo's international airport in Haneda - with about 900 acres about a sixth of the size of New York's Kennedy Airport - would be insufficient to meet projected needs. In 1963, the Japanese government began the search for means of coping with the increased demand. It considered an expansion of the Haneda facility into Tokyo Bay, but this was rejected since it would have represented an obstruction of navigational channels in the bay. Similarly, the possibility of reclaiming an entirely new tract of land in the bay was abandoned since it would have interfered with the air traffic of U.S. military bases. Finally, the U.S. did not express any willingness to relinquish one of its two big military bases for civilian use, and in fact, probably put additional pressure on the Haneda facility through flights supporting its military efforts in Vietnam.[1]

In view of this, the committee formed by the government to find a new site eventually suggested a location near the town of Tomisato. This led to immediate protests by residents and to considerable friction within the government. The conflict was resolved by Prime Minister Sato who announced on June 22, 1966 that a 2600-acre site at Sanrizuka near the town of Narita had been chosen.

There were a number of good reasons for this choice. First, the government already owned about one-third of the necessary land which belonged to Emperor Hirohito's stud farm. Second, the site was populated only by about 500 farmers most of whom

had moved into the area after World War II. Thus, only a relatively small number of people would have to relocate, and even fewer had strong ancestral ties to their land. Finally, the Narita region was economically depressed and undoubtedly stood to gain from the airport.

The most obvious disadvantage of the site was that it is over 40 miles away from Tokyo's centre, but the government intended to overcome this by building an expressway to Tokyo, as well as by extending a high speed train-line from Tokyo to the site. This would have brought travel times down to one hour by car, or to half an hour by train.

Perhaps the most crucial error in the planning of the airport was not the choice as such, but the government's apparent failure to consult most of the affected parties, including the relevant unions, municipalities and, of course, the farmers who had to move. This breach of the traditional Japanese rule of decision-making by consensus soon bore fruit. Less than a week after the initial announcement of the site, 1500 farmers warned the government to abandon its plans. Labour unions of the Chiba Prefecture (Province) declared their "absolute opposition" to the site, vowing a nationwide struggle. Even the Japanese National Railroad Company balked at having to build the train extension, because of its high costs.[3]

After its initial blunder, the government, through its newly formed Tokyo International Airport Corporation (TIAC), proceeded in more typically Japanese style, patiently negotiating with the affected farmers. In less than one year, the government had assembled about 80 percent of the necessary land, and by December 1970 only about 200 acres were still missing.

However, the government encountered stiff resistance from those farmers still holding on to their land, whose forces were soon swelled by several thousands of young protestors, many of whom actually settled on the land at the invitation of the farmers. The majority of these young radicals had had considerable "training" in civil disobedience during the anti-Vietnam war rallies of the 1960s, and the Narita airport came to replace the Vietnam War issue as a rallying point for forces opposed to the "establishment." While most of the farmers were worried and enraged about losing their land (for an airport which they could never afford to use), the young radicals soon also cited various environmental objections and alleged that the airport would be of military use, supporting this argument by drawing attention to the extraordinarily long and thick runway.[4]

By February 1971, the TIAC had bought all but 8 acres of the land necessary for the initial phase of construction, and optimistically projected completion of the facilities by June 1972. In September, police still battled with opponents, slowly forcing them out of tunnels and "fortresses" which had been built during the past five years. In the last of these struggles for land, three policemen were ambushed and killed, bringing the conflict world-wide publicity. Even after this event, and after the evictions were completed, opponents continued their resistance, reinforced now by farmers worried over an <u>expansion</u> of the as yet unfinished airport. In less than two weeks, the opponents had built a number of steel towers (one of them 200 ft. high) in the approach-flight path of the airport, making all flights impossible pending removal of the towers.

Meanwhile, the government had run into numerous other problems. It could neither acquire a right-of-way for the proposed expressway (even though construction had been begun), nor for the "bullet train." Instead, it had to use an existing train

line to Narita, had to build a six-mile extension of this line to the site (as as to overcome residents' complaints about materials moving over narrow local roads), and had to be satisfied with these roads as the main access for the airport even after completion. This was expected to increase the normal travel time from Tokyo to the site to 90 minutes by car and to 3 hours by rail. Even worse, the government was unable to complete a 25-mile pipeline for jet-fuel from the seafront town of Chiba to the Narita site. Use of the pipeline was opposed by residents, fearing earthquakes and "querilla attacks" by airport opponents, as well as by the Municipality of Chiba for political reasons (probably partly financial in nature, and partly due to pressure by unions). The government attempted to negotiate with the municipality, but to no avail. It eventually abandoned the almost completed pipeline. As an interim measure, the government decided to ship fuel to the airport via the existing rail line, supplemented by a temporary 6 mile pipeline from Narita to the site. Work on this pipeline was begun in October 1973, just about when the airport's initial phase was completed.

In June 1975, construction of this pipeline was finished, as was construction of a road to the north end of the airfield, necessary to move in cranes to remove towers erected by airport opponents. In May 1977, this culminated in the removal of the towers by more than 2100 policemen who surprised a handful of opponents at 3 a.m. in the morning with a court order, quietly obtained during a holiday period. The towers were removed and on the following day, the first plane landed for a test, six years behind schedule.

Commercial operation of the field was, however, still impossible because the municipalities with jurisdiction over the rail line

did not allow shipments of fuel, arguing that they feared attacks on trains by airport opponents. The same argument was brought forward by labour unions who wanted absolute guarantees for the safety of their members. Finally, the government came to an agreement with the municipalities, pledging about $450 million in grants. Taking its cue from this settlement, Chiba Municipality also agreed to an alternative pipeline to the airport from Tokyo Bay in return for $260 million worth of grants, often totally unrelated to the pipeline right-of-way.[3] This pipeline, however, was not scheduled for completion until 1981.

In January 1978, the government announced the official opening date of the airport for March 30, 1978. On March 26, however, airport opponents entered the administrative building (on the site which was guarded by 14,000 police and security men) through storm drains (security forces could not follow them since, in contrast to the opponents, they did not have maps of the drain system) and smashed important communications equipment in the control tower on the 16th floor of the building.

By this time, the government had lost whatever "face" it still retained and was under great pressure from hard-liners within the cabinet. After 48 hours of deliberation, Prime Minister Fukuda announced the 11th postponement of the opening ceremony, but also read a statement promising harsher measures against opponents.

During the following weeks, the government strengthened security at the site even more, issuing 1000 policemen with guns (a very unusual step in Japan) and even driving steel plates into the ground so as to prevent "tunneling" underneath fences by opponents. Similarly, the fuel train was guarded by several thousand policemen, one every 100 ft. along the 26-mile spur.

The government also attempted to negotiate with airport opponents, primarily hoping to split the farmers from their radical supporters. It had attempted the same tactic before, hoping to facilitate the expansion thereby, but failed. This time, it indicated its willingness to forego the expansion if the farmers came to an agreement with the government, but all such compromises were rejected.

The airport eventually opened on May 20, 1978 in spite of a cut communications cable which halted all air traffic over Japan for three hours. In view of the fact that the opening had been postponed 12 times, the presence of Prime Minister Fukuda or of the Emperor (as originally scheduled) was not considered appropriate. Although opponents have attempted to disrupt air traffic ever since (rallies of several thousand demonstrators took place in 1980), the airport has been in commercial operation since May 21, 1978.

The international airlines, which had never been entirely happy about the new airport, were relocated and had to pay what they considered to be exorbitant fees to help to underwrite the cost of the facility. This had increased from an initially projected $370 million to almost $3 billion, primarily due to the long delay, costing up to $300,000 per day.

APPENDIX B

A SECOND MAJOR AIRPORT FOR MIAMI

For several decades, Miami International Airport has been among the ten busiest airports in the United States in terms of air carrier operations as well as in terms of total operations. A number of major U.S. airlines have their headquarters in the area and carry out a large number of training flights. In 1967, for example, Miami Airport registered 447,000 total operations of which 160,000 (just over one-third) were airline transport training operations.[6] With an area of 4.5 square miles, Miami International is not a small airport, but the amount of traffic it can absorb is clearly limited. It is also situated relatively close to downtown Miami, leading to a large number of complaints.

Expansion plans for the airport had been talked about since the early 1950s, but it was not until the middle of the 1960s that Dade County (Miami) set up a task force to study the airport question. The task force considered expansion of the existing airport as well as numerous new sites, but eventually eliminated all possibilities, except Homestead Air Force Base and a site approximately 40 miles west of Miami and 6 miles north of the Everglades National Park. Eventually Homestead was also ruled out because its existing runway was oriented such that flights would have been very close to densely populated areas, which would probably have caused noise complaints, and a different runway orientation would have led flights directly over the south entrance to the Everglades Park and subsequently over the park itself. This left only the site just north of the National Park.

The Dade County Port Authority eventually chose an area of 38 square miles, two-thirds of which were in adjacent Collier County, while one-third was in Dade County itself. The Port Authority came to an agreement with Collier County giving it leadership and jurisdiction for the airport project. The site did indeed seem to offer a number of advantages. First, and fr the point of view of the Port Authority perhaps most important, it was large enough to accommodate any conceivable growth in ai traffic in the Miami area. Second, it consisted of swamp land of "submarginal" agricultural value.[7] Although the land was privately owned, the Port Authority expected no major problems in acquiring the land for a relatively low price ($150 per acre - a judgement which turned out to be entirely correct. Another advantage of the site was that the area was essentially unpopulated, with the National Park to the south and a sparsely populated Indian reservation to the north.

In February 1968, the Dade County Port Authority published its intention to build a "transition and training facility" at the site, but already indicated its long term interest in enlarging the facility to become a major international airport. In July 1968, the Authority published more detailed plans, showing two six-mile runways, two runways of conventional length, a super highway connecting Miami to the new site and that in turn to Naples, Florida in the west, as well as a proposed rapid transi link. It also hinted that recreational facilities might be provided in connection with the scheme. The Port Authority also claimed that all parties interested in the new development had given approval (generally written) of the site, among them, three federal agencies, five state agencies, the various region and municipal governments, the airlines, Florida Governor Claude Kirk, Indian Chief Buffalo Tiger and even the superintendant of the National Park who had recommended a nearby site

in May of 1967.[8] The federal Department of Transportation had even granted $500,000 for runway construction, pointing out that this was the first time that a grant had ever been made for a training-only facility.[9]

In response to the publication of its plans, the Port Authority seems to have received no major objections, and in September 1968 the necessary land was acquired by condemnation. Less than two weeks later, construction was begun, with the first runway expected to be completed by July 1969. In November 1968, Dade County published further plans for a high speed transportation link between the site and Miami, and it was in response to these publications that conservationists appear to have become aware of the scheme. In February 1969, they received a first hearing with experts from the Port Authority, and it became clear that the Authority had carried out little or no work to study the consequences of its plans for the environment and, in particular, for the National Park. Although it contended that wildlife would hardly be disturbed by the training facility, it soon became clear that neither the training facility as such, nor the wildlife were the major problems from an environmental point of view.

Instead, numerous conservation groups (among them the Audubon Society, the National Parks and Conservation Association and the Sierra Club) raised the longstanding problem of an adequate water supply for the Park, and, in particular, related it to the development of the area surrounding the proposed airport, which they believed would inevitably follow. An adequate water supply for the park had been a cause for disputes ever since army engineers began to build major drainage and irrigation systems in the north. This had severely disrupted the even water supply for the eastern part of the National Park, especially during times of drought (as in the early 1960s when the

engineers diverted all necessary water for agricultural use. So far, the western half of the park had been relatively unaffected by this, since it received its water from Big Cypress Swamp, but the airport was situated virtually on the boundary between the swamp and the park, and it was feared that eventually major portions of the swamp would be drained, thereby leaving the park dry.

While this conflict began to brew in Dade County, and had already led to tensions between the Governor of Florida and the federal Department of the Interior, the federal Department of Transportation seemed quite unaware of these worries and granted another $200,000 for a surface access study for the proposed airport. It claimed that this was an ideal case "for the demonstration of a completely new ground access system";[10] apparently no environmental impact study was carried out by the department. The Department of Transportation was, however, made aware of environmental problems when, late in April 1969, it received a letter from 19 organizations concerned about the environmental effects of the project. Among them were not only numerous conservation societies, but also a number of labour unions. Overall, the organizations represented more than 3 million members. Further, the Department of Transportation was accused by the Department of the Interior of violating guidelines in granting money for the project without first studying its environmental consequences.

The conservationists also received support from a number of senators (none of them from Florida), among them Senator Henry Jackson from Washington, who almost immediately convened the full Senate Interior Committee of which he was the chairman. Senator Jackson was at that time interested in exposing shortcomings in governmental decision-making as it affected environmental issues, and obviously saw the Senate

hearings as an opportunity to further passage of a bill relating to this, which he had submitted. The main result of the first hearing on June 3, 1969 was the authorization of a joint study group from the Department of Transportation (DOT) and the Department of the Interior (DOI), headed by Dr. Luna Leopold. The hearings also exposed the almost complete lack of environmental planning by the Dade County Port Authority, and the Authority found itself under heavy attack because of its uncompromising posture.

The governor of Florida, on the other hand, made it quite clear that his main concern was the provision of sufficient water for Florida's agriculture, and that the National Park occupied only a relatively low priority for him. The governor's assistant advocated limiting development of land surrounding the proposed airport, but was not prepared to guarantee a stable water supply for the park.[11] An almost curious agreement between opponents and proponents of the airport was however reached, insofar as both saw the training facility as a "foothold" for future development. While proponents of the plans saw this as a positive aspect in that it would give opportunity for planning of the surrounding area in such a way that it would not conflict with the airport, opponents saw the expected influx of over one million people as a grave danger for the park and for Florida as a whole. By this time, speculation in the land surrounding the airport abounded (prices had shot up to $800 per acre in less than one year), and a former president of Mobil Oil Corporation even began to build a $3 million office complex in Everglades City, a town of less than 1,000 inhabitants, near the proposed airport.

Dade County responded to environmental criticism by eventually hiring Overview Incorporated, an environmental consulting firm, recently founded by the former secretary of the Interior,

Stewart Udall. The company was to prepare "a balanced plan of development which will mitigate or eliminate possible adverse effects" of the proposed airport. Udall agreed to carry out his study only after he had been assured that the Port Authority would not continue construction beyond the already virtually completed training facility, while his work was in progress, and that a commercial airport would not be built if such a facility would "irreversibly harm" the National Park.[12]

At the same time as this study was begun, the Department of Transportation granted another $163,000 for runway lighting for the training facility, citing as a reason that this had by then become an "accomplished fact".[13] This, of course, increased the conflict between the DOT and the DOI which began taking a stronger position opposed to the airport. Even at this stage, newspaper reports[14] already hinted that it might be necessary for the U.S. president to intervene and resolve the interdepartmental conflict. Meanwhile, a third study of the airport issue had been begun by the prestigious National Academy of Sciences and Engineering.

During the second congressional hearing, late in August 1969, Senator Gaylord Nelson quoted conclusions from the "Leopold Report" (produced by the joint DOT and DOI study group) which argued that construction of the airport should be halted and that the training strip should be moved. The report apparently stated (it had not been published by then) that the training airport as such would not irreversibly harm the National Park, but that development of the surrounding land was sure to follow, and that this would destroy the park. However, proponents of the airport argued ingeniously that, on the contrary, Big Cypress Swamp was just typical Florida real estate and would eventually be developed; instead of bringing

harm to the National Park, the airport could then serve as a "buffer" for the park against such development.

During all this congressional wrangling, construction proceeded on the site, and by September 7, 1969, the first runway was finished. Three days later, Governor Kirk of Florida, Secretary of Transportation Volpe and Secretary of the Interior Hickel discussed the airport plans in Washington. They announced that no additional federal funds would be provided for the project until the various studies being conducted were finished (the Leopold Report had still not been published). They also decided to set up a joint task force to make recommendations and report back in 30 to 60 days. Differences of opinion between Volpe and Hickel were, however, immediately obvious, with the latter saying that he doubted that an airport would ever be built at the site, and Volpe remaining noncommittal. Dade County Port Authority, which was not present, responded to the announcement by stating that it would not consider a new site until it had received a report from Overview Inc.[15]

In the middle of September 1969, the Leopold Report as well as the Report of the National Academy was released. While the two reports agreed insofar as they did not see the training airport as a serious threat to the park, but regarded the development which might follow an airport as the main problem, they differed in their evaluation of the necessity of such development. The Leopold Report saw it as "inexorable" and thus advocated moving even the training facility; the National Academy, on the other hand, was less explicit. Although advocating the choice of a different site for the airport, it did not absolutely reject use of the facility for training purposes.

During the following weeks and months, pressures on proponents of the airport continued to grow. A number of senators urged Secretary Volpe to postpone the opening of the training facility which the Dade County Port Authority had scheduled for November 15, 1969. Even Dade and Collier Counties saw themselves forced to make some concessions and passed resolutions barring zoning changes in the area (the land was then zoned for primarily agricultural use). This, however, was almost immediately revealed to be a token concession, when a land developer filed a drainage application for 30,000 acres in the area, arguing that draining was necessary for agricultural use, and confirming the conservationists' worst fears. The conflict between the federal government departments seemed nowhere near a resolution, and the joint task force had not even met by the end of October (almost two months after it had been ordered to report back in 30 to 60 days).[16]

In spite of this lack of agreement, Secretary Volpe gave the go-ahead for the training airport in November 1969. Secretary Hickel was in the Virgin Islands at the time, and could not do much more than state to the press that he was "extremely concerned" about Secretary Volpe's action.[17] At this stage, the conflict threatened to become of national significance, and the White House saw itself forced to intervene. Consequently, Secretaries Volpe and Hickel met with White House Staff to attempt to resolve the dispute. Although the events at this meeting are not public knowledge, it seems that Secretary Volpe agreed to support postponement of the opening of the training airport. One can conclude this from the fact that the Dade County Port Authority had to postpone the opening of the airport twice since it did not receive the expected and necessary control and transition zone information from Washington.

A further upshot of the White House meeting was apparently the beginning of negotiations between the federal government departments, the state of Florida and Dade County. It was said that the federal government had decided to "exert all possible pressure to get an agreement from Dade County to another site for the airport".[18] While negotiations were proceeding, Volpe finally allowed training operations to commence, this time apparently with Secretary Hickel's agreement.[19]

Curiously, early in December 1969, Florida's governor suddenly appeared to leave the rank of the airport opponents, saying that it might be possible to have an airport at the site after all, if surrounding land could be acquired and preserved. Kirk's statements immediately came under heavy attack, but were explained when a few days later, Stewart Udall's consulting firm released its report. The Overview report suggested a "stripped down, enclave-type facility" at the site. All terminal facilities would be located at Miami International Airport and passengers would be transported to the new site by high speed (possibly air-cushioned) vehicles. Although this was not at all a new idea (the Port Authority had mentioned it as a possibility in 1968)[20], it had been modified by a rather ingenious proposal. Udall suggested that revenues from the airport be used to purchase over a million acres of surrounding land (essentially the entire Big Cypress Swamp) and convert it into a conservation area.

This plan was obviously a scientific master stroke since it took account of all objections raised by the Leopold Report as well as by the National Academy Report, and gave conservationists the added incentive of gaining Big Cypress Swamp as a conservation area, guaranteeing survival of the National Park. Apparently, it also had the backing of the counties

involved as well as of the governor (the airlines, however, were beginning to distance themselves from the entire plan, possibly because of the expected costs of the scheme). What Udall's idea failed to take into account was the fact that opinions in Washington had apparently changed by that time. The White House seemed to be totally opposed to the entire development scheme.

Governor Kirk almost immediately seemed to sense this and sent a note of "clarification" to Secretary Hickel, saying that he meant that "a conventional airport should not be built at the site, but if there is a way to use the airport as a catalyst to acquire the Big Cypress Swamp, then the present site might be made environmentally safe". However, all this did not seem to influence the federal government, which continued to negotiate for an agreement barring use of the present site. By the end of the year, only Dade County was still balking, apparently because it did not want to give up the site until an alternative was guaranteed.[21]

Finally, by the middle of January 1970, an agreement between the governments was reached. Dade County undertook to abandon its plans for a full-scale airport and to actively seek another site. The federal government agreed to the operation of the training facility at the present site, until a new location was available. Finally, the federal and state governments promised to reimburse Dade County for the $14 million which the present training facility had inflicted in costs.

The reason for the federal government's refusal to even consider the Udall plan finally became clear when President Nixon announced the agreement and pointed to it as an "outstanding victory for conservation" in his State of the Union Address. Nixon had apparently decided that his already

good pro-environmental record would be strengthened more by such an agreement, than by following up the Udall proposals.

Unfortunately, the agreement was not nearly as ironclad as it at first seemed, especially since it had never come before Congress (and thus only bound the government during its term of office), and since it did not stipulate what should be done if no new site could be found. Thus, conservationists' worries were again aroused when, in June 1970, Dade County commissioned a $65,000 study of the existing site as the location for an airport. Secretary Volpe added to this worry when, in January 1971, he admitted that the original site was still "under consideration," even though he thought it unlikely that it would eventually be chosen.[22] However, in July 1972, a team finally chose an alternative site, but it was declared that work on the airport would not commence until 1974. Meanwhile, the existing facility operated with over 100,000 flights per year, apparently without negative effects on the environment.

Then the energy crisis intervened, and air travel demand in Florida decreased considerably. Late in 1974, Big Cypress was established as a National Preserve, thereby eventually giving conservationists all they had hoped for, except the removal of the training strip. In 1979, the Dade County Port Authority (still headed by the same people as in 1968), began working on a major expansion of Miami International Airport, particularly on the land side. While complaining about the restricted space on the site, the Port Authority simultaneously lowered its landing fees, so as to attract additional air carriers.[23]

APPENDIX C

THE PROPOSED EXPANSION OF VANCOUVER INTERNATIONAL AIRPORT

Vancouver International Airport (VIA) began its life as a small airfield on Sea Island at some considerable distance from the densely populated regions of Vancouver and Richmond, British Columbia. Since the 1960s, VIA has been among Canada's three busiest airports. Since the beginning of the 1970s, there have been more than 150,000 landings and takeoffs per year at the airport, of which almost two-thirds were general aviation flights rather than air carrier flights.

There had been talk of expanding Vancouver International by integrating the whole of Sea Island into the airport area since the early 1950s. However, plans only began to take concrete form when it seemed as if a third runway might be needed for the airport. The idea was to build a runway parallel to the existing 10,000 ft. runway oriented in the generally prevailing wind direction. There also existed a cross-wind runway of just over 9,000 ft. in length.

Although the federal government had, in the early 1950s, slated the whole of Sea Island for airport use, it had only bought about half of the land, that part which was actually necessary for the airport at that time. In 1965, however, it bought some further land on the island when a development company which owned the land went bankrupt. In 1966, the federal Minister of Transport (hereafter referred to as MOT) reconfirmed his intention of eventually using the entire area for the airport, but another minister denied this in 1967. However, the Ministry began a policy of acquisition by voluntary sale in the same year (thereby obviously depressing real estate values considerably). In 1970, the matter came to a head when

the Department of Public Works (DPW) decided to build a bridge connecting Sea Island to Vancouver. This induced the MOT to begin expropriation procedures of the two parcels of land remaining in private hands on the island.

Although an MOT study indicated in November 1971 that an immediate construction of a third runway was not necessary, a further study advocating immediate expansion was published less than one year later, just a few days before expropriation notices were served.[24] This then provided the justification required by law for the expropriation. The affected owners filed objections against the expropriations, and accordingly the government had to hold public hearings to demonstrate need for the proposed public works. The first of these hearings was scheduled for December 1972, the second for February 1973.

By this time, the Greater Vancouver Regional District (GVRD), being responsible for regional planning, had been made aware of the federal expropriation plans by the Rate Payers Association. In early January 1973, GVRD staff began to discuss the airport expansion plans with MOT planners. The GVRD also sent representatives to the first expropriation hearing. At about the same time, the federal Department of the Environment (DOE) requested the MOT to submit an environmental impact statement relating to the proposed expansion.

At the second expropriation hearing in February, it became clear that there was widespread public opposition to the airport expansion plans. The GVRD was among those voicing reservations, particularly in relation to its regional development plan (the "livable region" plan). The MOT came under strong pressure at the hearing, especially since it was apparently unable to supply detailed information on the proposed expansion, thus giving

rise to the suspicion that it was either attempting to proceed in secrecy or that it did not have any detailed plans at all (which would have made the expropriation illegal). Only after the GVRD requested hearings to be halted because insufficient information had been made available by the DPW (and after a court order) did the DPW make the necessary information public. But even then the information seemed highly sketchy, and the City of Vancouver continued to press for halting of the hearings. Eventually,however,the expropriations were confirmed and in April 1973, the minister of Transport announced that the first expropriation would take place by September 1973, and the second (vital for a possible airport expansion) in August 1974.

The second expropriation hearing led to so much public protest that the GVRD decided to place the issue on the agenda of a Greater Vancouver Tri-level Committee meeting at the end of March 1973 (represented on the committee were the federal government, the provincial government and the GVRD). At this meeting, all parties agreed that better integration of airport planning efforts was necessary and to this end an Airport Planning Committee (APC) was established. Terms of reference for the committee were issued in April 1973, and in addition to representatives from the three levels of government, the committee eventually also included representatives from the City of Vancouver, the Township of Richmond, from the concerned communities organized in a "Community Forum", from the Air Carriers and from the B.C. Aviation Council (BCAvC). The committee was chaired by a member of the MOT Vancouver Master Planning Team which had previously been established.

At the same time, the MOT submitted five airport concepts to the DOE for environmental consideration. These were revised by the MOT in November 1973;in June 1974, the MOT withdrew two of the concepts, after it was told by the DOE that their

"implementation was considered a remote possibility".[25] Each of the remaining three concepts provided for a runway of 11,000 ft. in length, but with varying amounts of land reclamation necessary for each design.

Meanwhile, the APC had become entangled in disputes over the interpretation of its terms of reference. The major issue was whether these provided for a general consideration of the question of need for an expansion, or whether they only allowed for the study of various measures to alleviate and measure the impacts of the concepts advanced by the MOT. The former position was generally taken by opponents of the airport expansion (roughly including: the city of Vancouver, the GVRD and the Community Forum), while the latter was adopted by proponents of the airport expansion (MOT, DPW, Richmond, the BCAvC and the Air Carriers). The Community Forum was by far the most extreme party, arguing that it was the task of the committee to study the entire question of "social policy" as well.

In the latter half of 1974, it became obvious that the Committee did not have a common view of the problem and would certainly not be able to jointly agree on any recommendations. In view of this, the Tri-level Committee decided to terminate work of the APC prematurely, but to let it finish the studies which were already under way. (These were subsequently published in the APC, Final Report[26].) Publication of a pamphlet by the MOT entitled "Sorry about the Noise" in January 1975 led to further acrimonious debates in the Committee, and a few months afterwards its chairman resigned.

In June 1975, the MOT further increased the problems facing the APC when it modified one of its concepts for a parallel runway so that it required less land reclamation (by shortening the

proposed runway). This was modified less than a month later when the MOT finally published a proposal not necessitating any land reclamation at all, cutting the proposed runway length to 9250 ft. The APC felt it impossible to adapt its conclusions to these new proposals (in spite of strong protestations from the Community Forum) and thus produced a final report in March 1976 dealing only with the original proposals.

This, of course, made the report somewhat obsolete, and it primarily served to demonstrate the immense gulf of opinions and values which existed between the various parties. Very roughly, it emerged (not unpredictably) that the MOT, the DPW, the Township of Richmond, the Air Carriers and the BCAvC advocated immediate commencement of construction of a third runway; that the Community Forum advocated not expanding the airport; that the City of Vancouver, the GVRD, the DOE and the Ministry of State for Urban Affairs favoured postponement of the decision until additional information would be available; and the province of British Columbia would not commit itself to any one position.

In March 1976, the MOT announced its decision to build a third runway, conditional upon the conclusions of environmental impact statements to be produced by the ministry. In April, the MOT clarified its plans and in May it announced its intention of beginning to "preload" the runway (to build a foundation for it), so as to be able to act quickly should construction of the third runway actually begin. Although the Ministry reconfirmed its commitment not to expand the airport beyond the present dikes before 1978, it also indicated that such an expansion might be undertaken after that date.

In spite of these "reassurances", public protest against the proposal persisted, especially from the GVRD and the City of

Vancouver. In the November 1976 Vancouver elections, for example, all candidates were united in their opposition to the airport expansion proposals. It is not known whether it was this opposition or the stable volume of air carrier traffic at the airport, but, in any case, it seemed in March 1977 that the new minister of Transport had backed off from earlier plans when he said that the federal government had not yet decided on the third runway. However, he also said that "we (the federal government) will continue to work on ways we can make the most effective use of the capacities we have to meet the needs of the Vancouver region", which could be read either as a statement advocating a new runway or opposing it. Curiously, the federal government had simultaneously begun to stockpile sand from dredging operations, although it was claimed that this was not necessarily destined for the airport expansion.[28]

At the same time, the MOT proposals were still before the DOE so as to obtain guidelines for an environmental impact statement to be prepared by the MOT. To furnish such guidelines, a panel of five federal civil servants and one provincial civil servant was set up to hold public hearings on the issue in the fall of 1977. After attacks on the composition of the panel by the Community Forum, it was modified by adding two non-governmental persons to it.

It was quite clear that the Community Forum was playing for time and was highly successful in this choice of tactics and in their implementation. By February 1978, the panel had still not drafted the guidelines. Various groups speaking at the hearing also used it as a forum to publicize their complaints about the MOT's failure to undertake noise abatement measures for the existing airport layout which had been suggested in the APC's Final Report. The MOT had attempted to assemble a noise

mitigation panel, but refused to include non-governmental representatives. Under pressure from the Community Forum, the Vancouver City Council then withdrew its representatives from the panel, bringing its workings to a complete halt. The MOT finally implemented noise abatement measures unilaterally and claimed that this had led to a significant decrease of noise complaints, but community groups were obviously not satisfied by these measures, especially since they did not include all of those recommended in 1976.

In 1978, the coalition of airport expansion proponents finally began to disintegrate. First, Richmond Council decided by a narrow margin not to back immediate construction of a third runway. Instead it favoured use of the money to provide access from Richmond to the bridge connecting Vancouver to Sea Island. This step by Richmond was of considerable importance because the MOT had, for a long time, claimed that Richmond would benefit from the expansion since noise from the crosswind runway which primarily affected Richmond would be decreased. Thus, the MOT was then robbed of one of the few arguments which could conceivably have been favoured by environmentalists. Further, and perhaps even more importantly, the Air Carriers began to back off from the proposed expansion. Since 1975, the MOT had instituted a "user-pay" policy for airport construction, and the Air Carriers soon recognized that a third runway would be a very costly, but not absolutely necessary, addition.

Although the MOT published another master plan for the airport in October 1980 (quickly denounced by the Community Forum as "just a rehash"[29]), it now appears that the ministry will not attempt to implement such a plan against the exressed wishes of any of the participants.[30]

APPENDIX D

THE PROPOSAL TO USE TORONTO ISLAND AIRPORT AS A COMMERCIAL STOL-PORT

When Toronto Island Airport (TIA) was opened in 1939, it was anticipated that it would be the major airport for the area. However, Malton became the international airport and the island remained principally a site for recreational flying and training flights. Its proximity to downtown Toronto made it convenient for enthusiasts to fly without travelling to one of the suburban airports. During the last decade there have been planners who have sought to take advantage of this airport's location. These were the promoters of a city-centre to city-centre air service that would be mainly aimed at businessmen.

The aircraft (referred to as STOL aircraft) designed for this service are able to take-off and land in approximately half the distance of the larger conventional aircraft which makes them ideally suited for the smaller downtown airports. De Havilland Aircraft of Canada Ltd. designs and builds STOL aircraft, of which the most popular is the Dash-7 which was completed in the mid-1970s. This four-engine, fifty-passenger plane was claimed to create less pollution than a 1975 car and to be extremely quiet.[31]

Federal and provincial politicians, de Havilland and many businessmen believed that TIA could become the centre for a STOL service which would encompass cities within a 500-mile radius, including Kingston, Ottawa, Montreal, Sudbury, London and Windsor. This proposal was not favourably received by all concerned. In fact, during the early seventies the future of the airport itself was in doubt.

The Toronto Harbour Commission which operated the airport was reporting high losses, primarily attributed to the ferry which took passengers across the 400-foot Western Gap to the island. This ferry service was expensive and unreliable, especially during bad weather. The Commission threatened to close TIA unless it received substantial government subsidies. There were plans to redesign the area for a 60,000 resident housing development and to build a new airport on landfill south of Leslie and Cherry Streets in the Eastern Beaches area of Toronto. Alternatives discussed included using the new site for small jets of the DC-9 and Boeing 727 type and maintaining TIA for general aviation, turning the island into parkland, and building floating airports in the lake for jets and STOL.

Despite the alternatives, the idea of creating a STOL-port at the existing airport site was never totally dismissed. In 1972, when the federal government announced that the second international airport was to be located in Pickering Township, it included proposals to locate STOL-ports throughout the region and in particular at TIA. It appeared that both the federal and provincial governments were in favour of regular commercial flights at the island.

However, in 1973 when a two-year demonstration of STOL was being designed, TIA was not chosen as one of the test sites. There were two main obstacles. The first was the ferry access problem referred to above. Also the high buildings of downtown Toronto made it difficult to install an all-weather instrument landing system. Consequently, take-offs and landings relied on good visibility conditions. The demonstration service ran between Victoria STOL-port in Montreal and Rockville Airport in Ottawa from 1974-76 and was judged to have been successful, although perhaps not on strict economic grounds.[32]

De Havilland was bought by the federal government in 1974. This Crown corporation stood to benefit directly through the sale of Dash-7's for the service and from the demonstration of the plane's potential for other possible buyers. Employers and politicians from North York, where the plant was located, encouraged STOL for the financial returns they anticipated for this region. The Metropolitan Board of Trade also felt it would attract business to Toronto by providing swift, direct access to the financial district. Municipalities in southern Ontario that would be part of the STOL network, were enthusiastic. This was apparent after they had witnessed a successful demonstration of a new microwave instrument landing system at TIA in the fall of 1973. The demonstration proved that it was possible to land STOL aircraft on the island in all weather.

While out-of-town officials were in favour of a province-wide STOL service, many city aldermen and Torontonians were against it. Opponents argued that the increased air traffic and a new access bridge or tunnel would harm the recreational and residential character of the waterfront. They were also concerned about environmental damage. Although it was recognized that the Dash-7 was quiet and caused little pollution, the concern was that the introduction of a microwave landing system would lead to larger and noisier planes and a regular jet service out of the airport. Furthermore, the cost of the service would exceed the benefits received from it. For example, it was pointed out that the effect on Malton's overcrowded conditions would be minimal and that there was already adequate air service to the cities STOL would service. Also, railway interests were opposed to STOL because they wanted increased subsidies to develop high speed rail service in the Quebec-Windsor corridor.

Reports and recommendations continued to be presented on the issue with no decision being made. However, in 1978, Otto Lang, the minister of Transport, announced that the federal government would install a microwave landing system, build a moving pedestrian sidewalk across the Western Gap, and improve the airport terminal for STOL. Commitment to the service rested on the condition that there was local cooperation for the idea.[33]

Toronto City Council had not supported STOL in the past and had not changed its position. The Planning Board recommended an amendment to the official plan which would emphasize parkland, housing and general aviation on the island. The amendment was passed by Council. Additions to runways and an instrument landing system were prohibited. Also the weight of planes using the airport was restricted to 30,000 pounds, below the weight of a Dash-7.

The legality of the amendment was challenged by those in favour of STOL. The Housing minister rejected the proposal for residential use, stating that it was beyond the City's jurisdiction to implement. The amendment was also said to relate to airport policies which were part of the federal government's jurisdiction.

Art Eggleton was an alderman who did not totally object to STOL and indicated that he might be willing to accept a limited use of short take-off and landing planes on the island. He did, however, want the city to have controls over the type of planes used, primarily to prevent jets in the future. The federal government acknowledged that it would scale down its proposal from the elaborate province-wide service to a more limited programme.[34]

At this time there were already two airlines operating STOL service from the island. Atonabee Airways Ltd of Peterborough received a license from the Canadian Transport Commission (CTC) in 1974. It used a de Havilland's Twin Otter, a smaller STOL aircraft than the Dash-7, for flights to Peterborough, Kingston, Ottawa and Syracuse, New York. Four years later, Collingwood Air began daily flights to Parry Sound, Midland and Collingwood. However, due to the lack of an instrument landing system and the small scale of the operation, neither service had raised much controversy when introduced.

The larger service was attractive to airlines, and by the end of the 1970s there were five different airlines competing to provide the service. In October 1980, the CTC announced that it would refuse to license any airline until the City supported the proposal and committed funds for the airport's upgrading. This was in keeping with the federal government's policy.

The City's position altered shortly after this decision. In the November civic elections Art Eggleton replaced John Sewell as mayor. Eggleton was the first mayor to indicate a willingness to support STOL. He sought a compromise with Transport Minister Jean Luc Pepin. He wanted the City to have control over the type of planes using the airport. Parking on the mainland and access to the island were still unresolved issues.

In February, City Council voted that it was not "unilaterally opposed" to STOL. The four previous councils had continuously voted against it, chiefly on environmental grounds. There had been seven votes on the subject in the past, all with the same result. Politicians and businessmen had continued to pressure

aldermen to change their position. Some of the recent tactics had included a Gallup Poll commissioned by Dash Air (one of the airlines competing for the license). The poll showed a majority in favour of STOL in the wards selected. Several aldermen had been taken on a tour of de Havilland and on a flight in a Dash-7 which had altered their positions to favour the company. The aircraft manufacturer also showed a film at City Hall which proved that the microwave facility would not make it easier for jets to land.[35]

The council eventually approved an agreement for STOL in early June that had several conditions attached. For example, no jets will be permitted to use the airport except for emergencies. There was still opposition to the programme, but the CTC, now that it had the City's support, selected City Centre Airways of London, Ontario to provide short take-off and landing services between Toronto, Montreal and Ottawa. The system is scheduled to be in full operation within one to two years.

REFERENCES

Appendix A

(1) New York Times, July 10, 1966, p.70
(2) Ibid.
(3) New York Times, February 8, 1970, p.82
(4) New York Times, May 15, 1970, p.13
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Appendix B

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